BRITANNICA

Book of the Year

1938

ENCYCLOPÆDIA
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BOOK OF THE YEAR

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Being a survey of the principal persons,
events, and developments in various
spheres of knowledge and affairs during
the year 1937

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PREFACE

FIVE generations have come and gone since the publication of the First Edition of the Encyclopaedia Britannica. Subsequent editions appeared in due course, the current edition being the Fourteenth. The lapse in time between editions was necessarily lengthy and the device employed to bridge the gap was that of supplementary volumes, ranging in number from three to eleven, issued once, or rarely twice, in the intervals.

This device, satisfactory in more leisurely days, seems to have outlived its usefulness in an age when scientific and technical knowledge expand in range and volume at a pace equalled only by that of commercial and political developments. Moreover, a greater number of persons than ever before desires to keep in touch with the numerous and varied aspects of the contemporary scene and requires some authoritative and accurate means of doing so.

The resources of the Encyclopaedia Britannica organization have been marshalled to meet this situation by the issue, each spring, of a world-wide survey of the preceding year. The present volume is therefore the first of a series of future annual publications. It consolidates and summarizes the important facts about the events, discoveries, and personages of the year 1937. The information is presented in articles, illustrations, and tabular material arranged in alphabetical order, since that seems the most convenient for easy reference and follows the plan of the Encyclopaedia Britannica itself, to which the Book of the Year is designed to serve as an annual supplement, thus keeping up to date the sets of the Britannica in the hands of subscribers.

The Britannica Book of the Year is not intended solely for those who own the Encyclopaedia Britannica. It is intended for all those—expert and layman alike—who seek accurate present-day facts and statistics and authoritative and reliable information about the preceding year.

In conformity with the traditions and practice of the Encyclopaedia Britannica, the support and practical aid of scholars, scientists, and men of affairs of the first standing have been enlisted. The names of many of these who have previously contributed to the Encyclopaedia Britannica itself will be found in the list of contributors to this volume. To these, as well as to those equally well known in their various spheres of action or learning whose names appear for the first time as contributors in a Britannica publication, the thanks of the editors for the time and trouble they have so ungrudgingly devoted to this enterprise are gratefully tendered.

M. D. LAW

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H. L. St.	Herbert L. Stone. Editor, *Yachting Magazine*, New York. Author of *America's Cup Races*, etc.	**Motor-boat Racing; Yachting** (*in part*).
H. Mor.	Henry Morris, M.A. Education Secretary for Cambridgeshire.	**Village Colleges and Community Schools.**
H. O. Co.	Henry Oswald Coleman. Lecturer in Conversational English, Holiday Course, Cambridge. Author of *Intonation and Emphasis*, etc.	**Languages; Linguistics; Universal Language.**
H. Pe.	Harry Price. Honorary Secretary and Editor, University of London Council for Psychical Investigation; Member of Scientific Council, American Psychical Institute, New York.	**Psychical Research.**
H. P. S. M.	H. P. S. Matthews. Member of the Research Staff of the Royal Institute for International Affairs, London.	**Germany** (*in part*).
H. R. V.	Henry R. Viets, M.D. Assistant Neurologist, Massachusetts General Hospital, Boston.	**Psychiatry.**
H. V. H.	Henry Vincent Hodson, M.A. Editor of *The Round Table*, London.	**Australia, Commonwealth of; Financial Review; Tariffs; etc. etc.**
H. V. K.	H. V. Kaltenborn, A.B. News Editor, Columbia Broadcasting System, New York.	**Broadcasting** (*in part*).
H. V. T.	H. V. Taylor, O.B.E., A.R.C.S., D.Sc. Horticulture Commissioner, Ministry of Agriculture and Fisheries. Author of *The Apples of England*.	**Fruit Production; Horticulture; Market Gardening.**
H. W. C.	Harvey Wiley Corbett, B.Sc., F.R.I.B.A., F.A.I.A. Lecturer in Architecture, Columbia University, New York.	**Architecture.**
H. Wil.	Hal Williams, M.Inst.R.A., M.I.Mech.E., M.I.E.E., M.I.Struct.E. Principal of Hal Williams & Company, Engineer-Architects and Consulting Engineers, London. Author of *Mechanical Refrigeration*.	**Refrigeration and Household Refrigerators.**
H. W. K. W.	Hugh Walter Kingwell Wontner. General Secretary of the Hotels and Restaurants Association of Great Britain.	**Hotels, Restaurants, and Inns.**
H. W. L.	Harry W. Laidler. Executive Director, League for Industrial Democracy, New York.	**Socialism.**
H. W. Pe.	H. W. Peet. Editor of the Quaker Weekly, *The Friend*.	**Pacifism.**

AGRICULTURA LIBRARY TITUTE

H. W. Ri.	ADMIRAL SIR HERBERT W. RICHMOND, K.C.B., C.B., F.R.Hist.Soc., M.A. Master of Downing College, Cambridge, since 1936. Commandant of the Imperial Defence College, 1927–28. Vere Harmsworth Professor of Naval and Imperial History, Cambridge University, 1934–36. Author of *Sea Power in the Modern World.*	**Mediterranean, The.**
I. B. O'M.	I. B. O'MALLEY. Author and Reviewer.	**Children's Books** (*in part*).
I. Br.	IVOR BROWN. Dramatic critic of *The Observer,* and regular contributor to *The Manchester Guardian.* Author of *Parties of the Play* ; *I Commit to the Flames,* etc.	**Theatre** (*in part*).
I. S. Mu.	ION S. MUNRO. Rome correspondent of the *Daily Mail,* formerly of *The Morning Post.* Author of *Through Fascism to World Power,* etc.	**Italy.**
J. A. Hn.	J. A. HARRISON Chief wool correspondent of the *Wool Record and Textile World,* Bradford and London, since 1918. Director of John A. Harrison & Co., Ltd., Wool Brokers, Bradford.	**Wool.**
J. A. Ma.	J. ARTHUR MATHEWSON, K.C. Of Mathewson, Wilson & Smith, Barristers, Montreal.	**Montreal.**
J. A. S. R.	J. A. S. RITSON, D.S.O., O.B.E., M.C., B.Sc. Professor of Mining at the Royal School of Mines, South Kensington. Member of the Institutions of Mining and Metallurgy and Mining Engineers, London.	**Coal: World Production; Coal Industry** (*in part*).
J. Bd.	J. BLOMFIELD, O.B.E., M.D. Consulting Anaesthetist St. George's Hospital, London. President of the Association of Anæsthetists, Great Britain and Ireland.	**Anaesthetics.**
J. C. He.	JOSEPH CLARENCE HEMMEON, Ph.D. Head of Department of Economics and Political Science, McGill University, Montreal.	**New Brunswick; Nova Scotia; etc.**
J. C. S.	SIR JOSIAH STAMP, G.B.E., D.Sc., LL.D., F.B.A. Chairman and President of the Executive, London, Midland, and Scottish Railway. Director of the Bank of England. Author of *Wealth and Income of the Chief Powers* ; *Wealth and Taxable Capacity* ; *The National Capital and other Statistical Studies,* etc.	**Taxation; Wealth and Income, Distribution of.**
J. C. W. R.	SIR JOHN CHARLES WALSHAM REITH, G.B.E., D.C.L. Director-General, British Broadcasting Corporation.	**Broadcasting** (*in part*).
J. D. C.	JOHN D. CARLETON, B.A. Assistant Master, Westminster School, since 1932.	**English Literature.**
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J. E. H.	J. EDGAR HOOVER, LL.M. Director, Federal Bureau of Investigation, U.S. Department of Justice.	**Federal Bureau of Investigation, The.**
J. Eu.	JOHN EUSTICE, B.Sc., A.R.S.M., A.M.I.C.E. Prof. Emer. of Engineering, formerly Vice-Principal, Univ. College, Southampton.	**Reclamation** (*in part*).
J. F. Mo.	SIR JOHN FITZGERALD MOYLAN, C.B., C.B.E. Receiver for the London Metropolitan Police District and the Metropolitan Police Courts, since 1919. Author of *Scotland Yard and the Metropolitan Police.*	**Police.**
J. G. N.	J. G. NOPPEN, F.S.A. Author of *Westminster Abbey and its Ancient Art* ; *Royal Westminster and the Coronation.* Contributor to *The Quarterly Review.*	**Coronation.**
J. I. D.	J. IRVING DAVIS. Of Davis & Orioli, Rare Booksellers, London.	**Book Sales.**
J. Jas.	JOSEPH JASTROW, Ph.D., LL.D. Lecturer, New York School of Social Research. Formerly Professor of Psychology, University of Wisconsin.	**Psychology, Physiological.**
J. L. C.	LEWIS CROOME, B.Sc. (Econ.). Section Officer, Imperial Economic Committee, London.	**Vegetable Oils and Oilseeds** (*in part*).
J. L. F.	J. L. FRAZIER. Editor, *The Inland Printer,* Chicago. Author of *Type Lore,* etc.	**Printing.**
J. L. S.	MAJ.-GEN. J. L. SCHLEY, D.S.M. Chief of Engineers, United States Army. Formerly Governor of the Panama Canal Zone.	**Mississippi River System.**
J. Mh.	JAMES MACKINTOSH, O.B.E., N.D.A., N.D.D. Head of Dairy Husbandry Department, National Institute for Research in Dairying, University of Reading.	**Dairy Farming** (*in part*).
J. R. L.	LIEUT.-COMDR. JOHN RAWSON LUMBY, R.N. (Retd.). Assistant Naturalist in the Ministry of Agriculture and Fisheries.	**Oceanography.**
J. R. Ma.	J. ROSS-MACKENZIE, F.C.S., F.R.Mic.S. Scientific and Technical Editor, *The Brewer and Wine Merchant and Brewers' Guardian,* London. Author of *Brewing and Malting,* etc.	**Brewing and Beer.**
J. S. McL.	JAMES S. MCLESTER, M.D. Professor of Medicine, University of Alabama.	**Dietetics.**
J. Se.	JAMES STENNER. Speedway and Ice Hockey Correspondent of *The Evening News,* London.	**Speedway Racing.**
J. T. C.	JOHN THOMAS CULLITON, M.A. Assistant Professor of Economics and Political Science, McGill University, Montreal.	**Aberhart, William; Alberta; King, William Lyon Mackenzie; Social Credit; etc.**
J. W. Sc.	JAMES WALTER SCHADE, A.B. Director of Research, The B.F. Goodrich Company, Akron, Ohio.	**Rubber** (*in part*).
K. F. L.	KATHARINE F. LENROOT, B.A. Chief of the Children's Bureau, United States Department of Labor.	**Child Welfare** (*in part*).
K. L. R.	K. L. RAWSON, A.B. Navigating Officer and Geographer on Byrd's Antarctic Expedition.	**Antarctica** (*in part*).
K. W.	THE RT. HON. SIR KINGSLEY WOOD, P.C. Minister of Health, since 1935. Postmaster-General, 1931–35. Author of *Law of National Insurance* ; *National Health Insurance Manual,* etc.	**National Health and Fitness Campaign, The.**

L. A. E.	Lynn Arthur Emerson, E.E., Ph.D. Assistant Superintendent of Schools, in charge of Vocational Education, Yonkers, New York.	**Technical Education** (*in part*).
L. Ch.	Lawrence Chamberlain, A.B. President of Chamberlain Associates, Inc., New York.	**Bonds and Government Securities.**
L. El.	Lincoln Ellsworth. American Explorer. Author of *Our Polar Flight*, etc.	**Antarctic Exploration.**
L. E. L.	Lewis E. Lawes. Warden of Sing Sing Prison, New York.	**Penal Systems** (*in part*).
L. H. D.	Lawrence Hawkins Dawson. Member of Editorial Staff, 14th edition, *Encyclopædia Britannica.* Author of *A Short Guide to Chess*; *Introduction to London*, etc. Editor of *Routledge's Universal Encyclopædia*; *The March of Man*, etc. etc.	**Chess; London; Newspapers** (*in part*)**; etc.**
L. M. F.	Leonard M. Fanning. Director of Public Relations, American Petroleum Institute, 1928–31.	**Petrol** (*in part*)**; Petroleum** (*in part*).
L. P. G.	Lawrence P. Garrod, M.A., M.D., F.R.C.P. Bacteriologist to St. Bartholomew's Hospital; Professor of Bacteriology in the University of London.	**Immunization, Therapeutic.**
L. W. Be.	Lewis W. Bealer, Ph.D. History Department, University of Oklahoma.	**Argentina; Brazil; Mexico; etc.**
L. Wo.	Leo Wolman, D.Ph. Professor of Economics, Columbia University, New York. Author of *Ebb and Flow in Trade Unionism*, etc.	**Trade Unions** (*in part*).
M. C. E.	(*See* M. S. E.)	**Federal Reserve System.**
Me.	James Scorgie Meston, 1st Baron Meston of Agra and Dunottar, K.C.S.I., LL.D. Secretary to Finance Department, Government of India, 1906–1912. Lieut.-Governor, United Provinces of Agra and Oudh, 1912–17.	**Burma; India, etc.; Liberal Party, The.**
M. Fi.	Morris Fishbein, M.D. Editor of *The Journal of the American Medical Association* and *Hygeia*, Chicago.	**Medicine.**
M. Fl.	Margery Fletcher, M.A. Assistant Secretary, Institute of Historical Research, London.	**Historical Research.**
M. G. G.	Martin G. Glaeser, Ph.D. Chief Power Planning Engineer, Tennessee Valley Authority. Professor of Economics and Commerce, University of Wisconsin.	**Public Services** (*in part*).
M. McC.	Miller McClintock, Ph.D. Director of the Bureau for Street Traffic Research in Harvard University.	**Town and Country Planning** (*in part*)**; Traffic Laws and Offences** (*in part*).
M. N. M.	Brigadier M. N. McLeod, D.S.O., M.C., A.D.C. Director of the Ordnance Survey Department, Southampton.	**Ordnance Survey.**
M. P.	Mathias Pier, Ph.D. Formerly Assistant at the I.G. Farbenindustrie Aktiengesellschaft, Ludwigshafen-Oppau.	**Synthetic Fuels and Lubricants.**
M. S. E.	Marriner Stoddard Eccles. Chairman, Board of Governors of the Federal Reserve System, Washington, D.C.	**Federal Reserve System.**
M. Sr.	Margaret Sanger. Founder of the American Birth Control League.	**Birth Control.**
M. T.	Michael Tierney, M.A. Professor of Greek, University College, Dublin. Member of Dáil Eireann, 1925–32.	**Irish Free State.**
N. As.	Sir Noel Ashbridge, B.Sc. Controller of Engineering, the British Broadcasting Corporation. Vice-President of the Institution of Electrical Engineers. Member of Radio Research Board and Television Advisory Committee.	**Radio; Television.**
N. A. V. P.	Norman A. V. Piercy, D.Sc., M.Inst.C.E., M.I.Mech.E., F.R.Ae.S. Head of the Aeronautical Dept., Queen Mary College, London. Author of *Aerodynamics* and numerous Scientific Papers.	**Aeronautics.**
N. B.	Niels Bohr, Dr.Phil. Professor of Theoretical Physics at the University of Copenhagen, since 1916. Nobel prizewinner in Physics, 1922.	**Matter, Structure of.**
N. C.	Newcomb Carlton, A.M. Chairman of the Board, Western Union Telegraph Company, New York.	**Telegraphy.**
N. C. G.	Nathan Clifford Grover, D.Eng. Chief Hydraulic Engineer, in charge of Water Resources Branch, United States Geological Survey.	**Water Power.**
N. E. C.	Norman E. Crump. Statistical Correspondent and regular contributor to *The Financial Times*, since 1921. Editor of Lloyd's Bank *Monthly Review*, since 1930. Banking Editor of *The Economist* until 1937. Author of *A First Book of Economics.*	**Banking** (*in part*)**; Exports and Imports; Gold Reserve and Gold Standard; Government Expenditure; etc.**
N. E. W.	N. E. Wayson, M.D. Senior Surgeon, U.S. Public Health Service, Division of Infectious Diseases, Washington, D.C.	**Leprosy.**
N. F.	Norman French. Editor of *The Timber Trades Journal and Sawmill Advertiser.*	**Timber** (*in part*).
N. Ha.	Nicholas Hans, Ph.D., D.Litt. Lecturer in Education at the Froebel Society, London, and Adviser in Educational Research to the *Yearbook of Education*, London. Author of *Comparative Study of European Education*; *Educational Traditions in the English-speaking Countries*, etc.	**Education** (*in part*).
N. H. F.	N. Hamilton Fairley, O.B.E., M.D., D.Sc. Physician and Director of Special Research, Hospital for Tropical Diseases, London.	**Tropical Diseases.**
N. Ke.	Norman Keep, F.R.I.B.A. Head of the Senior Day School and Evening Building Department, London County Council School of Building.	**Building and Building Industry** (*in part*).

N. M.	N. McIntyre. Secretary to the Publications Department, the Girl Guides Association, London.	**Girl Guides.**
N. T.	Norman Thomas, B.D., Litt.D. Socialist Candidate for Presidency of the United States, 1936.	**Socialist Party, The.**
N. W. P.	N. W. Pirie, M.A. Demonstrator in Biochemistry at the University of Cambridge.	**Biochemistry.**
O. J. R. H.	O. J. R. Howarth, O.B.E., M.A.(Oxon.), Hon.Ph.D.(Leeds). Secretary of the British Association. Author of *The British Association : A Retrospect*, 1831–1931, etc. etc.	**British Association for the Advancement of Science.**
P. de K.	Paul de Kruif, M.D. Bacteriologist. Author of *Microbe Hunters* ; *Men Against Death*, etc.	**Infantile Paralysis.**
P. D. W.	Paul D. White, M.D. Assistant Professor, Harvard University Medical School.	**Heart and Heart Diseases.**
P. F.	P. Fitzgerald. Editor of *The Statist*.	**Gold; Diamonds.**
P. F. D. T.	P. F. D. Tennant, M.A. Prelector, Queen's College, Cambridge.	**German Literature** (*in part*).
P. H. W.	Percy Henry Winfield, F.B.A., LL.D., F.R.Hist.S. Rouse Ball Professor of English Law, Cambridge University. Of the Inner Temple, Barrister-at-Law. Member of the Lord Chancellor's Law Revision Committee.	**Public Statutes of the United Kingdom.**
P. J. S. R.	P. J. S. Richardson. Editor of *The Dancing Times*. Honorary Secretary of the Royal Academy of Dancing, and Chairman of The Official Board of Ballroom Dancing.	**Dancing.**
P. L. Y.	P. L. Yates, M.A. Research Worker in Agricultural Economics.	**Agriculture** (*in part*) **; Poultry; etc.**
P. M. H.	P. M. Heldt. Engineering Editor, *Automotive Industries*, New York. Author of *The Gasoline Automobile*.	**Motor Vehicles, Commercial.**
R. E. B.	Richard Evelyn Byrd. American Antarctic Explorer.	**Antarctica** (*in part*).
R. E. Bd.	Roland Ernest Bird, B.Sc. (Econ.). Stock Exchange Editor of *The Economist*, London.	**Investment Trusts; Stock Exchanges** (*in part*).
R. F. Wo.	Ruth Frances Woodsmall. General Secretary of the World's Young Women's Christian Association, since 1935.	**Young Women's Christian Association.**
R. J. J.	Sir Robert James Johnstone, M.B., F.R.C.S.Eng., F.C.O.G. Emeritus Professor of Gynaecology, Queen's University, Belfast.	**Gynaecology and Obstetrics.**
R. L. C.	Russell L. Cecil, M.D. Professor of Clinical Medicine, Cornell University.	**Pneumonia.**
R. McC.	Maj.-Gen. Sir Robert McCarrison, C.I.E., M.D., D.Sc., LL.D., F.R.C.P. Director, Nutrition Research in India, 1926–35. Member Nutrition Committee, Medical Research Council. Author of *Studies in Deficiency Disease*; *Food*; *Nutrition and National Health*, etc.	**Nutrition; Vitamins.**
R. M. F. P.	Ralph M. F. Picken, B.Sc., M.B., Ch.B., D.P.H. Mansel Talbot Professor of Preventive Medicine, University of Wales. Chairman, Public Health Committee, British Medical Association.	**Epidemiology and Infectious Diseases** (*in part*)**; Public Health Services** (*in part*).
R. Ph.	Ralph Phillips, M.S., M.B. (Lond.), F.R.C.S. (Eng.), D.M.R.E. (Cantab.). Halley Stewart Fellow, St. Bartholomew's Hospital, London.	**Radiotherapy.**
R. Pin.	René Pinon. Professor in the School of Political Science, Paris. Foreign editor of the *Revue des Deux Mondes*, Paris.	**France; French Equatorial Africa; etc. etc.**
R. R. K.	R. R. Kuczynski, Dr.Sc.Pol. Research Fellow, London School of Economics.	**Birth Statistics; Death Statistics; Population Trends; etc.**
R. R. N.	Robert R. Nathan. Chief of National Income Section, United States Department of Commerce.	**National Income.**
R. S. Tr.	Robert Scott Troup, C.M.G., C.I.E., M.A., D.Sc., F.R.S. Professor of Forestry, University of Oxford, 1920– . Member of the Indian Forest Service, 1897–1924. Director, Imperial Forestry Institute, 1924–35. Author of *Silviculture of Indian Trees* ; *Exotic Forest Trees in the British Empire*, etc.	**Forestry and Reforestation** (*in part*).
R. W.	Rene Wellek, Ph.D. Lecturer at the University of Prague. Research Fellow in Czechoslovak at the School of Slavonic Studies, University of London.	**Literature of Central and South-Eastern Europe** (*in part*).
S. A. He.	Stephen Alfred Heald, B.A. (Oxon.). Secretary Information Department, The Royal Institute of International Affairs, London. Editor of Annual volume of *Documents on International Affairs*.	**League of Nations; Nine-Power Conference; Permanent Court of International Justice; Refugees; etc.**
S. B. F.	Sidney B. Fay, Ph.D., D.H.L. Professor of History, Harvard University. Author of *The Origins of the World War*, etc.	**Danzig; German Literature** (*in part*)**; Germany** (*in part*)**; Hitler, Adolf; National Socialism; etc.**
S. E. D.	S. E. Davies. Member of the Executive of the Nursery School Association of Great Britain. Formerly H.M. Inspector of the Board of Education.	**Nursery Schools** (*in part*).
S. E. J.	Stanley Edward Jacobs, B.Sc., A.R.C.S., Ph.D. Lecturer in Bacteriology at the Imperial College of Science and Technology, London, and at Sir John Cass Technical Institute, London. Author of various papers on Soil Bacteriology.	**Bacteriology.**
S. J. W.	Sidney John Worsley, D.S.O., M.C., T.D. Academic Registrar, University of London, since 1930, and Acting Principal, 1936–37.	**London University.**

S. Lea.	Stephen Leacock, Ph.D., Litt.D., LL.D., D.C.L. Professor Emeritus, McGill University, Montreal.	**Canada.**
S. L. En.	Sylvia Lennie England, Ph.D. (Lond.). Membre de la Societé d'Histoire littéraire de la France. Author of *The Massacre of St. Bartholomew*; contributor to the *English Historical Review*, etc.	**Belgian Literature; Dutch Literature; etc.**
S. S. H.	S. S. Huebner, Ph.D., Sc.D. Professor of Insurance and Commerce, University of Pennsylvania.	**Stock Exchange** (*in part*); **Stocks and Shares** (*in part*).
S. Yak.	Sergei Yakobson, D.Phil. (Berlin). Librarian and Hon. Lecturer in Russian History at the School of Slavonic and East European Studies, London. Editor of *Minerva*, 1929–31.	**Russian Soviet Federated Socialist Republic; U.S.S.R.; etc. etc.**
T. B.	Thomas Beach. Principal, Kilburn Polytechnic, London. Author of *The Collaboration of Education and Business*; joint author of *Business Economics*.	**Technical Education** (*in part*).
T. Be.	Thomas Bedford, D.Sc., Ph.D. Investigator to the Medical Research Council's Industrial Health Research Board. Author of *Modern Principles of Ventilation and Heating*; *The Warmth Factor in Comfort at Work*, etc.	**Industrial Hygiene.**
T. Cr.	Thomas Craven. American Art Critic. Author of *Men of Art*; *Modern Art*, etc.	**Painting.**
T. E. O.	T. E. Osmond, M.C. (Cantab.), M.R.C.S.Eng. Pathologist, V. D. Department, St. Thomas's Hospital, London. Vice-President, Medical Society for Study of Venereal Disease.	**Venereal Diseases.**
T. H. P.	T. H. Pear, M.A., B.Sc. Professor of Psychology in the University of Manchester. Author of *Skill in Work and Play*; *Fitness for Work*, etc. etc.	**Vocational Guidance.**
T. J. H.	T. J. Haarhoff, B.Litt., Litt.D.Amst. Professor of Classics in the University of Witwatersrand, Johannesburg.	**South African Literature.**
T. P.	Thomas Parran, M.D. Surgeon General, U.S. Public Health Service.	**Public Health Services** (*in part*).
T. P. P.	Thomas Paine Potter, B.A. Assistant Editor of the *General Minutes* and Statistician of the Methodist Episcopal Church.	**Methodist Church, The** (*in part*).
T. Ra.	Terry Ramsaye. Editor of *Motion Picture Herald* and *Motion Picture Almanac*, New York.	**Motion Pictures.**
T. S. A.	T. S. Anderson, D.D.S., Penn.H.D.D., R.F.P. & S., L.D.S., R.C.S.Ed. Late Radiologist, Settlers Hospital, Eastern Province, South Africa.	**Dentistry.**
T. T.	Terry Thomas, M.A., LL.B., B.Sc., Ph.D., J.P. Headmaster of Leeds Grammar School. President of the Headmasters' Association, Great Britain, 1936.	**Secondary Education** (*in part*).
V. B.	Victor Brodsky. Labour and Industrial Correspondent of *The News of the World*, London.	**Arbitration, Industrial; Crime; Juvenile Crime; etc.**
V. G. C.	V. Gordon Childe, D.Litt., D.Sc., F.S.A., F.R.S.Ed. Abercromby Professor of Prehistoric Archaeology, University of Edinburgh. Author of *The Dawn of European Civilization*; *New Light on the Most Ancient East*; *The Prehistory of Scotland*, etc.	**Archaeology** (*in part*).
V. R.	Viola I. Ripley, B.Sc. Assistant Lecturer in Biology, Huddersfield Technical College, 1926–28. Author of numerous articles on Canoeing and Camping.	**Botanical Gardens; Science Museums; Zoological Gardens; etc.**
V. S.	Vilhjalmur Stefansson, A.M., Ph.D., LL.D. Commander of the Canadian Arctic Expedition, 1908–12. Author of *The Friendly Arctic*, etc.	**Arctic Exploration.**
W. A. C.	William Alexander Carrothers, D.F.C., Ph.D. Professor of Economics, University of British Columbia.	**British Columbia.**
W. A. M.	William A. Morris, B.Sc. (Econ.). Assistant to the Economic Adviser in London to the Commonwealth Government of Australia.	**Australian Literature.**
Wa. Wal.	Waltman Walters, M.D. Associate Professor of Surgery, University of Minnesota, Minneapolis.	**Surgery** (*in part*).
W. B. M.	W. Bryant Mumford, M.A., Ph.D. Head of the Colonial Department, University of London Institute of Education. Formerly Superintendent of Education, Tanganyika Territory.	**Dependent Peoples, Education of.**
W. G. C.	W. G. Clifford. Editor of *Billiards and Snooker*, London.	**Billiards.**
W. H. Al.	William Harvey Allen, Ph.D. Director, Institute for Public Service, New York.	**New York City.**
W. H. Br.	Wilfred H. Brookes. Editor of *Wisden's Cricketers' Almanack*.	**Cricket.**
W. H. Ch.	William Henry Chamberlin. Chief Far Eastern Correspondent, Tokyo, of *The Christian Science Monitor*.	**China; Japan; Manchukuo; Sino-Japanese War; etc.**
W. H. McC.	William Hunter McCrea, M.A., Ph.D., B.Sc., F.R.S.E. Professor of Mathematics in Queen's University, Belfast. Sometime Isaac Newton Student of Cambridge University. Co-editor of the *Observatory*; author of *Relativity Physics*.	**Astronomy.**
W. H. O.	Wilfred Hudson Osgood, A.B., Ph.D. Chief Curator of Zoology, Field Museum of Natural History, Chicago.	**Natural History Museums.**
W. H. T. L.	Captain W. H. T. Long. 'Scolopax' of the *Shooting Times*; contributor on Shooting matters to the *Illustrated Sporting and Dramatic News*, and other publications.	**Shooting.**
W. Hu.	W. Hubball, Esq. Editor of *The Silk and Rayon Journal*, Manchester.	**Rayon.**

W. I. K.	Willford. I. King, Ph.D. Professor of Economics, New York University. Author of *Wealth and Income of the People of the United States*, etc.	**Purchasing Power of Money.**
W. J. T.	William John Tydeman, A.M.I.Mech.E. Publicity Manager, Associated British Machine Tool Makers, Limited. Editor of *British Machine Tool Engineering*.	**Machinery and Machine Tools.**
W. O. L. S.	W. O. Lester Smith, M.A. Director of Education for Manchester, England.	**Education Administration in Great Britain.**
W. M. Ci.	Sir Walter McLennan Citrine, K.B.E. General Secretary of the British Trades Union Congress. President of the International Federation of Trade Unions. Author of *The British Trade Union Movement*, etc.	**Trade Unions; Trades Union Congress.**
W. M. Ma.	William Miller Macmillan, M.A., F.R.Hist.S. Research Fellow in African History and Administration. Formerly Professor of History, University of Witwatersrand, Johannesburg. Author of *Complex South Africa*, etc.	**Rhodesia, Northern; Rhodesia, Southern; South Africa, Union of; etc.**
W. R. I.	The Very Rev. William Ralph Inge, K.C.V.O., D.D. Dean of St. Paul's, 1911–34.	**Religion.**
W. T. M.	The Rt. Revd. William T. Manning, D.C.L., LL.D. Bishop of New York.	**Protestant Episcopal Church.**
W. T. St.	W. Tetley Stephenson, M.A. Cassel Reader in Transport at the London School of Economics and Political Science.	**Motor Transport** (*in part*).
W. T. We.	W. T. Wells, B.A. (Oxon.). Barrister-at-Law. Formerly Oxford University Extension Lecturer in History and Political Theory.	**Civil Population, Protection of; World Armaments; etc.**
X.	Initial used for anonymous contributors.	

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DIARY OF EVENTS, 1937

Jan. 1 : **Spanish Civil War.**—Italy sent proposals to Non-Intervention Committee relating to control of Spain's finances and of entry of foreigners into Spain.

Jan. 2 : **Anglo-Italian Mediterranean Agreement** signed in Rome, recognizing freedom of communication.

Britain laid keels of two new 33,000-ton battleships.

French Budget passed by French Chamber and Senate, after delays owing to Senate's opposition to certain provisions in the Fiscal Reform Bill.

United States.—Mr. Andrew W. Mellon, former secretary of the U.S. Treasury and ambassador to Great Britain, offered his valuable art collection to the American Government.

Jan. 3 : **German Government** promised to cease retaliatory acts against Spanish Government's shipping as soon as demand for release of *Palos* cargo and passenger was met.

United States.—Representatives of United Automobile Workers of America agreed to strike in 69 General Motors plants in 14 States if company refused to negotiate with union ; ' sit-down ' strikers continued to hold two Fisher Body plants in Flint, Mich., in defiance of injunction.

Jan. 4 : **Lebanon.**—Constitution of 1926 restored. President Eddeh and Parliament retained their mandates.

China.—Special pardon granted to Marshal Chang Hsueh-Liang, the captor of Marshal Chiang Kai-Shek, last December, subjecting him at the same time to strict supervision in military affairs.

Jan. 5 : **Spanish Civil War.**—Foreign Enlistment Law to prevent recruiting for Spain passed in Belgium.

International Tin Cartel signed agreement for continuation of cartel for another five years.

Jan. 6 : **Palestine.**—Jewish-Arab disturbances in Palestine. Arab Higher Committee announced that the boycott of the Royal Commission was ended.

New South Wales.—Lord Wakehurst appointed governor in succession to the late Admiral Sir David Anderson.

United States House and Senate passed resolution banning export of arms to Spanish Government or Insurgents. Embargo effective Jan. 8.

Germany banned Polish frontier area to civil aeroplanes.

Jan. 7 : **Cricket.**—Australia won third Test match against England at Melbourne by 365 runs.

League of Nations.—Anglo-Egyptian treaty and convention regarding British forces in Egypt ratified.

The Netherlands.—Marriage of H.R.H. Princess Juliana, heiress to the throne of the Netherlands, to Prince Bernhard von Biesterfeld.

German-Japanese anti-Comintern accord explained by Mr. Arita, Japanese foreign minister.

Germany and Italy rejected Franco-British proposal for immediate ban on foreign volunteers in Spanish armies ; expressed willingness to support measure if all Powers represented upon London Non-Intervention Committee agreed to it.

Jan. 8 : **United States.**—The president's annual budget message to Congress forecast a conditionally balanced budget in the fiscal year 1938, and a completely balanced budget and halting of the rise of the national debt at $35,000 millions the following fiscal year.

Following Japan's refusal to renew naval limitation treaties, which expired Dec. 31, 1936, the construction of two 35,000-ton battleships was authorized.

Amended Neutrality Act, prohibiting the shipment of war supplies from the United States to countries in a state of civil war, signed by Mr. Roosevelt.

French Government warned Spanish insurgents that landing of German troops in Morocco violated Franco-Spanish pact of 1912 ; Germany denied Moroccan activity.

Jan. 9 : **Germany.**—Reich government announced conclusion of German-Portuguese treaty, effective Dec. 18, 1936, under which Portugal agreed to restore German properties seized during World War.

Jan. 10 : **British Government** forbade enlistment of its citizens in either government or insurgent Spanish armies, and called upon other Powers to take similar action.

China.—Shensi revolt. Sianfu, capital of Shensi Province, in hands of radical elements.

Italy promulgated important new home and colonial decrees, many of which related to Abyssinia.

Jan. 11 : **Germany.**—Herr Hitler and French ambassador to the Reich exchanged formal assurances that neither Germany nor France would disturb the *status quo* in Spain and Spanish Morocco.

United States.—Battle between police and ' sit-down ' strikers, at Fisher Body plant in Flint, Mich., resulted in injuries to 28 persons.

Jan. 12 : **Great Britain.**—Mr. Anthony Eden, in London address, declared Britain would, if driven, push rearmament programme as hard as any nation, but would strive unceasingly for world peace.

United States.—Mr. Roosevelt presented to Congress his programme for administrative reorganization, calling for two additional cabinet departments and six executive assistants to the president, with all non-policy-determining offices placed under civil service.

Jan. 14 : **Italy.**—General Göring and Signor Mussolini in Rome conference agreed that, pending effective non-intervention by all Powers in Spanish war, Germany and Italy would rush support to insurgent forces.

Canadian Parliament opened with speech from the throne announcing conclusion of new five-year trade agreement between Britain and Canada.

Jan. 15 : **United States.**—Truce arranged between General Motors Corporation and United Automobile Workers' Union in Michigan. ' Sit-down ' strikers agreed to evacuate plants during negotiations.

French Chamber of Deputies unanimously empowered M. Blum's government to bar French volunteers from Spanish armies when other Powers agreed to similar measures.

Jan. 16 : **Germany** prohibited free passage of foreign warships through the Kiel Canal.

Jan. 17 : **United States.**—Strike conference called off by General Motors. Mr. Frank Murphy, governor of Michigan, appealed to secretary of labour for mediation aid.

Spanish Civil War.—Soviet government expressed agreement with principle of prohibiting foreign volunteers in Spain.

Jan. 18 : **Palestine.**—Royal Commission in Palestine ended its sittings. (Investigations began Nov. 16, 1936.)

United States.—Committee headed by Mr. Ickes, secretary of the interior, appointed to prepare legislation establishing a national policy on electric power.

Jan. 19 : **Great Britain.**—Mr. Anthony Eden solemnly warned Germany in Commons speech that she could decide Europe's future ; promised British aid to Reich if Germany abandoned idea of national exclusiveness and co-operated fully with other Powers in efforts to secure peace.

United States. — World-distance speed record for land planes established by Howard Hughes in 2,490-mile flight from Los Angeles to Newark.

Jan. 20 : **British Empire** decided to establish new air bases at Hong Kong, Penang, and Ceylon, to protect shipping.

United States.—Franklin D. Roosevelt took the oath as president for the second time, reiterating his faith in adequacy of Constitution, and dedicating his second administration to secure a sufficiency for ' those who have too little '.

Conference between Miss Perkins, secretary of labour, Governor Murphy, and General Motors officials to break deadlock in automobile strike.

Spanish Civil War.—Portugal offered to guard against importation of arms and volunteers into Spain, on her own frontier, but objected to international control.

Jan. 21 : **Great Britain.**—Explosion in Markham Colliery, near Chesterfield; 8 men killed.

Spanish Civil War.—French senate passed Bill banning volunteers to Spain.

Japan.—Hachiro Arita, foreign minister, speaking before Japanese Diet, urged colony-owning nations to adopt free trade policy towards nations lacking raw materials, as an aid to world peace.

United States.—Automobile strike negotiations in Washington temporarily ended when Alfred P. Sloan, president of General Motors, refused to continue discussion unless strikers evacuated plants.

Jan. 22 : **India.**—Mr. Gandhi announced retirement from politics.

Jan. 23 : **Soviet Russia.**—Seventeen leading Communists, including Karl Radek, prominent journalist, and Gregory Piatakoff, former assistant commissar for heavy industry, placed on trial in Moscow for participating in plot allegedly instigated by Leon Trotsky, confessed plan to overthrow Soviet régime and assassinate its leaders.

Japan.—Hirota cabinet resigned under pressure of Army leaders bent on establishing fascist régime; Gen. Ugati, former governor-general of Korea, to form new ministry.

Jan. 24 : **France.**—M. Blum, the French premier, in speech at Lyons, expressed his conviction that the fate of a possible general understanding in Europe lay in the hands of Germany alone.

Bulgaria and Yugoslavia signed treaty of friendship.

Jan. 25 : **United States.**—Atlantic and Gulf Coast maritime strike ended after 11 weeks' unsuccessful effort to secure union recognition.

Spanish Civil War.—Replies to the British note relating to volunteers in Spain received from both Italian and German governments. German government agreed in principle, and urged that volunteers already in Spain should be evacuated.

Jan. 26 : **Canadian Foreign Policy** outlined by Mr. Mackenzie King, the prime minister, in a debate in the Dominion House of Commons.

Rubber Quota.—The International Rubber Regulation Committee fixed the exportation percentage of rubber at 85 per cent. of the basic quota for the months of July, August, and September.

Jan. 27 : **Great Britain.**—The National Executive of the Labour Party disaffiliated the Socialist League.

United States.—The secretary of labour requested Congress for a grant of power to subpoena records and witnesses in settling industrial disputes.

Great Britain and Italy reached an agreement concerning grazing rights and the use of ports on the frontier of Abyssinia and British Somaliland.

New Austro-German Trade Agreement signed in Vienna.

League of Nations Council reached a compromise in dispute between France, Syria, and Turkey over Alexandretta.

League of Nations reached a settlement of the Danzig question.

Jan. 28 : **Canada's 'New Deal' legislation** on wages and hours, unemployment insurance, and marketing regulation, passed in 1934 and 1935 by the Bennett government, was declared unconstitutional by the Privy Council's Judicial Committee in London.

Jan. 29 : **United States.**—Navy planes completed spectacular non-stop flight from San Diego to Honolulu in 21hrs. 43mins.

Jan. 30 : **Germany.**—Hitler, in Reichstag speech, commemorating National Socialism's fourth anniversary, repudiated 'war guilt' clause of Versailles Treaty, demanded return of former German colonies, and declared that Reich was replacing 'era of surprises' by one of international co-operation.

Soviet Russia.—Thirteen alleged Trotskyists on trial for treason against the government were sentenced to death and executed on Feb. 1; four others, including Karl Radek and Gregory Sokolnikoff, former ambassador to Great Britain, were given prison terms ranging up to 10 years.

Jan. 31 : **Great Britain.**—H.M. King George VI issued his first Honours list.

Britannia Trophy awarded to Miss Jean Batten for her solo flight from England to New Zealand in Oct. 1936.

United States.—Record floods in the Ohio Valley began to recede after causing more than 400 deaths and property damage placed at $550 millions; approximately 671,000 persons were rendered homeless.

Feb. 1 : **Great Britain.**—British Tramp Shipping subsidy was passed in the House of Commons, and the Merchant Shipping Bill was read for the second time and carried without a division.

Poland completed plans for fortification of her German frontier with French aid.

Japan.—General Hayashi succeeded in forming a cabinet after General Ugati had failed.

Feb. 2 : **French Chamber of Deputies,** 405 to 186, approved the Blum government's defence programme, doubling the 19,000 million franc appropriation already voted for the current year, to match reported German 1936–37 defence expenditure of 12,600 million marks.

Great Britain.—Sir Eric Phipps appointed British ambassador to France and Sir Nevile Henderson ambassador to Berlin.

Feb. 3 : **The 33rd International Eucharist Congress** of the Roman Catholic Church opened in Manila.

United States.—The president submitted to Congress a report of the National Resources Committee, accompanied by recommendation for the adoption of a 6-year $5,000 million public works programme, including flood-control projects.

Feb. 4 : **Great Britain.**—Regency Bill passed by the House of Commons.

United States.—Pacific Coast strike ended after 96 days with return of 40,000 seamen to work.

Norway.—Mr. Lars Christensen, Norwegian explorer, reported discovery of a range of mountains between the 35th and 40th degrees of longitude in the Antarctic.

Cricket.—The fourth Test match between England and Australia resulted in a win for Australia by 148 runs.

Feb. 5 : **United States.**—Mr. Roosevelt sent to Congress a message and bill seeking comprehensive reforms designed to 'vitalize the courts'. He asked for power to appoint a maximum of 6 additional Supreme Court justices—one for each incumbent over 70 years of age who fails to retire—and up to 50 lower court justices.

Soviet Government approved proposed international ban on arms and volunteers for Spain, providing it participated in naval patrol to enforce measure.

Feb. 6 : **Germany** launched the first heavy cruiser of her post-war navy.

Feb. 8 : **Spanish Civil War.**—Málaga fell to General Franco's forces.

Feb. 9 : **Egypt.**—Mr. Walter Emery, British archaeologist, discovered the only known mummy of a noble of the first dynasty of Egypt.

Soviet Russia.—Leon Trotsky offered to submit to arrest by Soviet government if found guilty by impartial tribunal of alleged crimes.

United States.—President Roosevelt, submitting to Congress the report of his Great Plains Committee, advocated long-range programme to fight drought in 10 States.

Feb. 11 : **Great Britain.**—Mr. Neville Chamberlain announced in British House of Commons government's decision to spend £400 millions for rearmament during next five years.

United States.—The 44-day automobile strike ended, with General Motors Corporation announcing a $25 millions wage increase, and recognition of the United Automobile Workers as bargaining agent for its membership.

Feb. 12 : **Italy.**—Princess Marie-José, wife of Crown Prince Umberto of Italy, gave birth to a son. This is the Princess's second child. A daughter was born in 1934.

German Reichsbank placed under Chancellor Hitler's direct control and railways under that of the transport minister, allegedly to end 'foreign influences'.

Feb. 13 : **United States.**—Martial law was declared in Indiana, after strike clash in which 10 persons were injured. John L. Lewis announced that unionization of the steel industry would be the next objective of the Committee for Industrial Organization.

Feb. 14 : **The Netherlands.**—The government rejected Hitler's offer to guarantee the neutrality of Holland and Belgium.

Feb. 15 : **Japan.**—Senjuro Hayashi, addressing first session of Diet since fall of Hirota cabinet, announced a policy of non-aggression, and invited China and the Soviet Union to establish more cordial relations with Japan.

Germany.—Herr Hitler authorized a free election of new General Synod of the German Evangelical Church, recognizing failure of efforts to co-ordinate German Protestantism with the Nazi régime.

Feb. 16: **Great Britain.**—London Non-Intervention Committee agreed to prohibition against additional foreign volunteers in Spanish war, and to ban entry into Spain of arms and volunteers.

British government announced that in April it would commence the most extensive and costly naval construction programme ever launched in peace time.

United States.—Mr. Roosevelt submitted to Congress the report of his Special Committee on Farm Tenancy.

Russia sent a note to the British government declaring its adherence to the London Naval Treaty (1930), in so far as the action of submarines against merchant shipping is concerned.

Feb. 17: **Great Britain.**—Resolution carried authorizing loan of £400 millions for defence services.

Feb. 18: **Spanish Civil War.**—French cabinet approved measures for preventing volunteers for Spain.

Great Britain.—Mr. Stanley Baldwin, in the House of Commons, stated Britain's intention to work for new regional security pact in western Europe to replace Locarno Treaty.

Feb. 19: **China.**—Kuomintang party convention decided to terminate 10-year war on Chinese Communists in return for latter's agreement to submit to Nanking government's supervision.

Abyssinia.—Marshal Rodolfo Graziani, viceroy of Ethiopia, and two other officials wounded by hand grenades thrown by Ethiopians in Addis Ababa. An army of 3,000 Ethiopians planning to attack the capital at the same time was reported virtually destroyed.

Great Britain.—Revised coronation oath for the British sovereign issued, mentioning the Dominions by name and confining the Protestant pledge to the United Kingdom.

Feb. 20: **Spanish Civil War.**—Non-Intervention Committee reached agreement on the control of Spanish ports. Portugal refused international control of frontier, but permitted observers from the British Embassy to see how she carried out her undertaking.

Feb. 21: **Poland.**—Colonel Adam Koc announced formation of a new Polish party with semi-fascist programme.

Feb. 23: **Rumania.**—Reorganization of the cabinet resulted from undue prominence given to funerals of two members of the Iron Guard, the Rumanian fascist organization. M. Tatarescu took over ministry of home affairs.

Abyssinia.—Italian official sources estimated that over 100 armed Ethiopian suspects in Addis Ababa bombing outrage had been executed.

Feb. 24: **Abyssinia.**—Ras Desta Demtu, son-in-law of Emperor Haile Selassie of Ethiopia, was captured and put to death by native troops under Italian command.

Feb. 25: **Canada.**—Trade agreement with the United Kingdom signed at Ottawa.

United States.—Senate, by 58–24 votes, passed joint resolution, already approved by House, extending to June 12, 1940, president's power to negotiate trade pacts with foreign governments.

Feb. 26: **France.**—M. Blum won a 361–209 vote of confidence in French chamber of deputies after an attack on his financial policy.

Russia and Portugal retired from international naval patrol of Spanish coast after participating Powers conceded the right to take part.

Feb. 27: **United States.**—Mr. Roosevelt submitted to 48 State governors model law under which farmers' obedience to soil erosion control by local agencies would be made compulsory.

Poland.—Prof. Wilk of Cracow discovered new comet of the 7th magnitude.

Feb. 28: **Canada.**—Social Credit Government of Alberta announced no monthly dividend would be paid.

March 1: **Great Britain.**—Air Registration Board formed to control issue of air certificates to British civil aircraft.

United States.—Supreme Court, in 5–4 decision, upheld 1933 congressional abrogation of gold payments as applied to rental contracts calling for payment in gold bullion.

March 2: **Cricket.**—Australia won fifth Test match, by an innings and 200 runs, and thereby retained the Ashes.

United States.—Major steel companies averted a general strike by granting 40-hour week and minimum daily wage of 5 dollars.

March 3: **United States Senate,** by a 63–6 vote, adopted the Pittman resolution providing for strict neutrality and a minimum of discretion for the president in the event of foreign war.

China.—Appointment of Mr. Wang Chung-Hui, formerly Chinese minister to London and a judge of the Permanent Court of International Justice at The Hague, as Chinese foreign minister.

Japan.—Appointment of Mr. Naotake Sato, formerly delegate to Geneva and ambassador to Paris, as foreign minister.

March 4: **Great Britain.**—London County Council elections. The Labour Party gained a majority of 26 seats, a net gain of 6 seats.

March 5: **International Tin Committee** decided to maintain the quota for April, May, and June unchanged.

United States.—House of Representatives passed the Naval Supply Bill, voting $526,555,000 to Navy.

French Government terminated ban on gold and promised balanced budget in effort to secure return to France of gold sent abroad.

March 6: **Australian referendum** rejected two constitutional amendments extending Federal powers over marketing and aviation.

Spanish Civil War.—Detailed plan for coastal supervision by Britain, France, Germany, and Italy drawn up.

March 7: **United Kingdom.**—Navy, Army, and Air Force estimates for 1937–38 totalled £278 millions to be provided by loan and taxes.

March 8: **Spanish Civil War.**—Non-Intervention Committee finally approved scheme for controlling coasts and land frontiers of Spain.

Bank of International Settlements.—Sir Otto Niemeyer, of the Bank of England, was elected chairman of board of Bank; Dr. Beyen, president.

United States.—The major Detroit plants of Chrysler and Hudson automobile companies closed by new series of 'sit-down' strikes.

March 11: **French Defence Loan Bill,** providing for a loan of not more than 10,500 million francs passed by Chamber and Senate.

Danish Prime Minister announced discussion with members of the Swedish government on possibility of defensive alliance between the Scandinavian countries.

International Steel Cartel.—European steel-producing countries cooperated in purchase of iron and steel scrap and invited other interested countries to participate.

March 12: **International Tin Committee** decided to increase the quota of tin to 110 per cent. for April, May, and June.

Spanish Civil War.—International Board for Non-Intervention in Spain appointed with Vice-Admiral M. H. Van Dulm of the Netherlands as chairman.

Finland.—New cabinet formed under Prof. Cajander to maintain friendly relations with all countries, particularly with Russia and Scandinavian countries.

March 13: **French Government** expropriated Creusot works of Schneider armaments firm, largest in France.

North Africa.—Mussolini, in inspection tour of Libya, opened new 1,250-mile highway to Egyptian border.

Spanish Civil War.—International coastal and frontier supervision came into force.

Offensive against Madrid by Italian troops in Spanish insurgent service defeated at Brihuega, near Guadalajara.

March 15: **Great Britain.**—Air estimates, amounting to £82 millions, introduced to the British House of Commons.

Serious floods in Fen country.

South Africa Union's Budget showed surplus of £5 millions.

March 16: **French Defence Loan** fully subscribed, the second list being opened and closed on same day.

March 17: **Secretariat of the League of Nations** announced agreement by 12 of the 23 States invited, to attend International Sugar Conference.

March 18: **Vatican City.**—Anti-Communist encyclical, issued by Pope, urging States 'to prevent within their territories the ravages of the anti-God campaign'.

Philippines.—President Quezon of the Philippine Commonwealth, in conference with Washington officials, asked complete independence for Philippines in 1938 or 1939 instead of on the scheduled date in 1946.

March 20 : **Spanish Civil War.**—Spanish insurgent troops reported as flying in panic before government drive in Guadalajara sector, leaving behind many prisoners and huge stores of munitions.

United States.—Strike at Chrysler plants in Detroit spread to Michigan, Indiana, and Illinois ; general strike in Detroit threatened.

March 21 : **Vatican City.**—An encyclical from the Pope, read from Berlin pulpits, declared the Church would defeat all efforts to substitute modern ideologies for Christian faith ; and attacked Nazis for alleged violations of concordat.

March 22 : **Germany.**—All Catholic schools in the Palatinate and Saar taken over by the Government.

Blue Riband of the Atlantic regained by French liner *Normandie* on her return trip from the United States, with average speed of 30·99 knots.

March 23 : **Fishery Convention,** signed by 10 European governments, enforcing use of British minimum mesh limits in all except territorial waters ; other provisions to ensure an increase of marketable fish in the sea.

Great Britain.—Text of a bill to ensure widows', orphans', and old-age pensions to workers of the 'black-coated' class was issued.

Spanish Civil War.—Sub-Committee on Non-Intervention reached deadlock on question of withdrawal of foreign troops already fighting in Spain.

Germany.—Decree issued by German Reich Church minister to provide for administration of church affairs pending the holding of elections ordered by Herr Hitler.

Reich government appointed Dr. Hans Henrich Dieckhoff as ambassador to the United States, succeeding Dr. Hans Luther.

March 24 : **Spanish Civil War.**—Soviet representative made allegations to Non-Intervention Committee on increasing intervention in Spanish affairs by Italy.

Great Britain.—Oxford won the University Boat Race by three lengths in their first victory over Cambridge for 14 years.

March 26 : **Spanish Civil War.**—Insurgents inflicted severe losses on government troops on the Cordoba front and advanced on Pozoblanco.

Italy and Yugoslavia arrived at political agreement for respecting each other's frontiers, and a trade agreement.

March 27 : **Japan.**—A note expressing Japan's refusal to adhere to the limitation of gun-calibre of warships to 14in., handed to the British ambassador in Tokyo by the Japanese foreign minister.

India.—Decision of Indian Congress leaders not to form provincial governments followed refusal of governors to refrain from impeding the Congress Party policy.

March 29 : **India.**—Frontier clashes and fighting in Waziristan, on North-West Frontier.

United States.—Supreme Court, by 5–4 decision, upheld three legislative Acts under the 'new deal', *viz.* the Railway Labor Act, the Farm Moratorium Act, providing assistance to insolvent farmers, and the Washington State law, establishing minimum wages for women.

March 30 : **United States.**—Pan-American Clipper surveying 7,000-mile commercial air route between United States and Australasia reached Auckland, New Zealand.

Soviet Government, alarmed by industrial production slump, ordered 20 per cent. increase in output over the preceding year.

March 31 : **Japanese Diet** dissolved and new elections ordered.

April 1 : **India and Burma.**—Provincial autonomy came into force in India. Burma also received its new constitution. Aden was inaugurated as a colony. A day of mourning and cessation from work was declared by Congress Party in token of its pledge to wreck the new régime.

United States.—Mr. Cordell Hull enumerated four principles as essential to the preservation of peace : (1) restoration of international law ; (2) restoration of international morality ; (3) non-intervention in the internal affairs of other nations ; (4) economic rehabilitation based on the reduction of trade barriers and equality of treatment in trade affairs.

Strikes in Flint and Pontiac, Mich., closed six General Motors plants and rendered 18,000 idle.

South-West Africa.—A proclamation in Pretoria made it an offence for British subjects to own allegiance to any head of a State or sovereign other than the king, and curtailed the political activities of non-British persons in South-West Africa.

Spanish Civil War.—Insurgent advance on Basque Provinces continued, with fierce hand-to-hand fighting. The Basque government ordered general mobilization throughout the territory.

Belgrade Conference.—The standing Committee of the Little Entente met. The three States—Czechoslovakia, Rumania, and Yugoslavia—adhered to the system of a joint foreign policy.

April 2 : **United States.**—Several hundred workers protesting against discrimination in selection of men to be laid off, closed Ford Assembly plant at Kansas City with a 'sit-down' strike.

Great Britain.—Accident on the Southern Railway caused 8 deaths and injuries to 40 persons.

April 3 : **United States.**—Strike in General Motors plants in Flint ended, with 15,000 workers scheduled to return under a general wage adjustment.

April 4 : **Aviation.**—A contract for an air service from Portugal to North America *via* the Azores was signed by the Portuguese Government, Pan-American Airways, and Imperial Airways.

Soviet Russia.—M. Yagoda, commissar for postal and electrical communications, formerly head of the G.P.U., dismissed from office.

April 5 : **Sugar.**—The International Sugar Conference opened at the Foreign Office, London.

United States.—House of Representatives passed a bill extending until 1941 the powers of the secretary of agriculture to pay financial grants to farmers.

Spain.—Insurgents captured Ochandiano, on Basque frontier. Government troops bombed Ceuta in Spanish Morocco.

April 6 : **Italy.**—Italian naval policy expounded ; Italian Navy estimates showed an increase of 248 million lire over 1936.

South-West Africa.—In reply to German protest against the proclamation of April 2, General Herzog stated that the German element had introduced measures which could not be tolerated, and rendered the proclamation necessary.

Russia.—General Khalepsky was appointed commissar of communications in succession to M. Yagoda.

April 7 : **United States.**—Chrysler automobile strike settled. Chrysler corporation recognized Union.

Belgium.—M. van Zeeland, prime minister, undertook inquiry into possibility of reducing barriers to international trade.

April 8 : **Aviation.**—Agreement reached between Canada, the United States, Great Britain, and the Irish Free State for a Transatlantic air service operated by Pan-American and Imperial Airways.

April 9 : **Aviation.**—Two Japanese airmen in their Japanese aeroplane, *Divine Wind*, arrived at Croydon airport after a record flight from Tokyo 9,800 miles in 94hrs. 18mins.

Rumania.—Prince Nicholas, brother of King Carol, renounced royal rights and resigned his position as general in the Rumanian army.

April 10 : **United Kingdom.**—Mr. Stanley Baldwin, announcing his impending retirement, warned England that neither Fascism nor Communism can solve the problems of the country.

Libya and Italian East Africa.—Signor Mussolini announced new constitution for Libya, with partial self-government, and a new port to be built at Assab, Eritrea.

India.—Further fighting on North-West Frontier resulted in casualties : 7 British officers, 2 British other ranks and 20 Indians killed.

April 11 : **Belgium.**—M. van Zeeland won a striking victory over the Rexists in the Brussels by-election.

April 12 : **United States.**—The Supreme Court upheld the Wagner Labor Act, recognizing labour's rights to organize for collective bargaining and mutual protection.

April 13 : **United Kingdom.**—*Ark Royal*, the new air-craft carrier, was launched at Birkenhead.

Lord Zetland appointed first secretary for Burma in addition to his office as secretary of State for India.

April 14 : **India.**—North-West Frontier unrest led to concentration of 30,000 troops in Waziristan.

France.—Agadir, in French Morocco, was opened as a naval base.

April 15: **Spanish Civil War.**—Non-Intervention Committee decided to bring the control system into operation as from April 19, and to prepare a scheme for the withdrawal of volunteers from Spain. Italy expressed willingness to discuss withdrawal of volunteers.

United States.—The House of Representatives passed an anti-lynch law by 276 votes to 119.

Palestine.—Arab terrorists at Haifa assassinated Khalim Pasha Effendi, the assistant chief of police.

April 16: **United States.**—The Circuit Court of Appeals in Boston declared unconstitutional the unemployment and old age assistance provisions of the Social Security Act.

April 17: **Italy.**—All shipyard firms with a capital of 10 million lire or over were declared nationalized.

April 18: **China.**—The Kwangsi war lords joined with the Nanking leaders in forming a new national defence council, thus furthering Chinese unity against Japan.

April 19: **Germany.**—Herr Hitler, in conversation with Mr. Lansbury, expressed Germany's willingness to attend an international conference on economic co-operation and armament limitation.

Spanish Civil War.—International patrol of Spanish coast to bar foreign war supplies and 'volunteers' went into effect at midnight.

South-West Africa.—July 1 set as the date after which only British subjects may be members of certain political organizations.

April 20: **United States.**—President Roosevelt, in message to Congress, estimated deficit for fiscal year 1937 at $2,557 millions, and asked for $1,500 millions for 'work relief' to be made available in June.

United Kingdom.—Mr. Neville Chamberlain, chancellor of the exchequer, presented his sixth budget to the House of Commons, raising the income-tax and imposing a 'National Defence Contribution' on trade and industry.

Miners' ballot decided by 444,546 votes to 61,445 to strike in support of men in Notts coalfield.

Bus strike in provinces.

April 21: **Germany.**—Jewish charitable and social lodges were suppressed, and their president was arrested.

Spain.—Madrid experienced the tenth successive day, and the heaviest, of insurgent shelling, making total of 200 fatalities and at least 400 wounded.

April 22: **Poland.**—Jews were barred from membership of the National Totalitarian Party.

South-West Africa.—A semi-official communication from Berlin states that young Germans now completing their education in Germany will be educated to maintain their German community on their return to South-West Africa.

April 23: **United Kingdom.**—King George VI unveiled Windsor's memorial to King George V. It was erected by people of Windsor, Berks., and of Windsor, Ontario, Canada.

Canada.—Motor strike at Oshawa, Ontario, ended.

Spanish Civil War.—Three British food ships successfully ran the blockade of Bilbao, protected outside territorial waters by the battle cruiser *Hood*.

April 24: **Belgium.**—A joint Anglo-French note to the Belgian foreign minister announced agreement with Belgium's request to be released from the terms of the Locarno Treaty, while continuing the Anglo-French guarantee of Belgian neutrality.

South Africa.—At Serowe, Bechuanaland, ex-Queen Bagakgametsi pleaded guilty to trying to harm the queen mother by 'mystic potions and incantations'.

April 25: **Spanish Civil War.**—Insurgent troops advanced to within three miles of Durango, about 30 miles from Bilbao. Two more British food ships reached Bilbao, and one Santander.

April 26: **United Kingdom.**—The issue of a National Defence Loan, of £100 millions was announced by Mr. Chamberlain in the House of Commons.

Mr. Baldwin announced in the House of Commons that the Government would buy up coal royalties. Special Areas (Amendment) Bill received third reading.

United States.—The U.S. Supreme Court invalidated a 66-year-old law prohibiting insurrection against the State. As a result, a Negro Communist was released.

Motor-car Racing.—Capt. Eyston broke the world's record for diesel-engined cars at Montlhéry, France.

April 27: **United Kingdom.**—Mr. Chamberlain announced important concessions on his Budget Profits Tax Scheme (National Defence Contribution).

Germany.—In addition to her western fortifications, Germany is rapidly adding to her defences of her eastern boundary.

Spanish Civil War.—Guernica, the 'holy city' of the Basques, was entirely destroyed by Insurgent aircraft.

April 28: **Germany.**—Catholic priests and laymen were sentenced to varying terms of imprisonment for 'high treason'.

India.—The Congress Working Committee passed a resolution approving the attitude of provincial leaders in refusing office.

April 29: **Spanish Civil War.**—Insurgent troops occupied the ruined town of Guernica.

April 30: **Spanish Civil War.**—The largest Insurgent vessel, the battleship *España*, was sunk off the north coast of Spain.

United Kingdom.—London busmen decided to strike from midnight.

Egypt.—Agreement for termination of capitulations in Egypt in 1939 reached at international conference.

Irish Free State.—Text of New Free State constitution issued in Dublin. Name changed to 'Eire', which was declared to be 'a sovereign independent democratic State'.

Soviet Russia.—The Moscow–Volga canal, converting Moscow into a seaport, was opened.

May 1: **Germany.**—Addressing a May Day gathering, Herr Hitler demanded the right of the State to educate German children, without interference from any religious bodies.

France.—Two airwomen established a record for the flight from Paris to Pondicherry.

United States.—Mr. Roosevelt signed the Neutrality Bill, and issued texts of two proclamations, carrying its terms into effect.

May 2: **Japan.**—Political parties opposed to the government defeated the government at the general election, but the government expressed its intention to remain in power.

May 3: **Aviation.**—Mr. H. L. Broadbent reached England after making a record flight from Australia.

United Kingdom.—Alterations to the Civil List include an additional annuity to the Duke of Gloucester and the provision of £6,000 a year to Princess Elizabeth.

Mrs. Wallis Simpson's decree nisi was made absolute.

May 5: **Aviation.**—Mr. H. L. Brook reached England after a record flight from Capetown.

France.—Bomb explosion in the Bordeaux-Marseilles express killed a French passenger and injured 20 others.

May 6: **Aviation.**—The German airship *Hindenburg* was destroyed by fire at Lakehurst, New Jersey, with the loss of 33 lives.

Spanish Civil War.—Two ships, containing 5,000 refugees, left Bilbao and were escorted to France.

United Kingdom.—In London a new Chelsea bridge was opened by the Canadian prime minister.

May 7: **Aviation.**—Colonel Pezzi set up a new altitude record by reaching a height of nearly 9¾ miles.

May 8: **Italy.**—Signor Mussolini recalled all Italian newspaper correspondents in England and banned all English newspapers except the *Daily Mail*, the *Evening News*, and the *Observer*.

United Kingdom.—The Home Office decided to enforce the regulations regarding the admission of foreigners into England.

Capitulations.—At Montreux, Switzerland, by the signatures of Great Britain, France, Italy, the United States, and eight other nations, all foreign voice in making of law in Egypt ends Oct. 15, 1937.

May 9: **Poland.**—The Polish Medical Association resolved that Jews should no longer be eligible for membership, and the Polish Lawyers' Association decided to limit the number of Jewish lawyers to 10 per cent. of the total number.

May 10: **Sweden.**—Prince Charles of Sweden, son of the King's second brother, renounced his royal rights on receiving permission to marry Countess Elsa von Rosen.

United Kingdom.—King George VI issued his Coronation Honours list, and held a State banquet for 450 guests at Buckingham Palace.

May 11 : **Czechoslovakia.**—The premier, M. Hodza, attributed the improvement in international relations between Germany and Czechoslovakia to Britain's rearmament programme.

Japan.—A pamphlet issued in Tokyo by the minister of marine, expressed concern at the rearmament of Britain, Russia, and the United States.

May 12 : **United Kingdom.**—His Majesty King George VI and Her Majesty Queen Elizabeth were crowned in Westminster Abbey. His Majesty the King broadcast an address to his people all over the world.

May 13 : **Spanish Civil War.**—An explosion occurred on the British destroyer *Hunter* while she was patrolling the south coast of Spain ; 8 men were killed and 14 injured.

Germany.—The Government decided to levy an import duty on rubber and to develop ' buna ', an artificial rubber.

Poland.—The most serious pogrom experienced by Jews in recent years took place at Brest-Litovsk.

May 14 : **Aviation.**—Messrs. Merrill and Lambie completed the first commercial round-trip flight from New York to England and back with the coronation pictures.

Denmark.—King Christian X celebrated the Silver Jubilee of his reign.

United Kingdom.—The Imperial Conference, held in London, was opened.

May 15 : **Italy.**—Signor Mussolini declared that if Italy abandoned national self-sufficiency, she would be at the mercy of other nations in the event of a war.

It was officially announced that 20 new submarines were to be laid down during 1937.

May 16 : **United Kingdom.**—The Socialist League decided to end its existence.

Russia.—Seven trades union leaders were arrested on charges of embezzlement of funds.

Rumania.—The Federation of Rumanian Free Professional Associations decided to bar all minorities from the professions.

Albania.—Rebels seized the city of Argyrokastion, but were driven out next day.

May 17 : **Russia.**—Thirteen military Councils were created to control the training of officers and men and the organization of supplies.

Aviation.—The Guggenheim gold medal for the advancement of aviation was awarded to Dr. Eckener, for his work on lighter-than-air machines.

Spanish Civil War.—A new government was formed by Dr. Juan Negrin.

May 18 : **France.**—A communiqué issued re-affirmed the Franco-Soviet pact.

United States.—The Senate Judiciary Committee, by 10 votes to 8, rejected Mr. Roosevelt's plans for the reform of the Supreme Court. Justice Willis van Devanter announced his resignation.

Spanish Civil War.—The Non-Intervention Committee decided to appeal to both sides in the civil war to refrain from aerial bombardment.

General Emilio Mola's insurgent troops entered Amorebreta 9 miles south-east of Bilbao.

May 19 : **Italian East Africa.**—A programme of public works, including road construction, maritime development, etc., was announced.

May 20 : **United States.**—The German ambassador lodged a protest with the State Department, against the attack made by Cardinal Mundelein, Archbishop of Chicago, on the present régime in Germany.

United Kingdom.—H.M. the King, accompanied by the Queen and Princess Elizabeth, reviewed the fleet at Spithead.

May 21 : **Japan.**—The Showakai Party, the only political party with seats in the cabinet, disbanded itself.

Spanish Civil War.—Over 4,000 child refugees left Bilbao for Southampton.

May 22 : **Italy.**—The Vatican newspaper, *Osservatore Romano*, reported the confiscation in Germany of 18 German Catholic printing plants which published the Pope's Easter anti-Nazi encyclical.

Russia.—The execution of more than 20 anti-government plotters at Tbilisi in the Georgian Soviet Socialist Republic was reported.

May 23 : **Russia.**—Four Russian scientists established a radio station at the North Pole.

United Kingdom.—A report issued by the *Discovery* Committee indicated that whaling was on the verge of extinction.

Spanish Civil War.—The official inquiry found that the *Hunter* struck a floating mine.

May 24 : **United Kingdom.**—Considerable reductions promised in taxes on industry imposed by the profits tax in 1937 budget.

United States.—The Social Security Act was upheld by the Supreme Court.

President Roosevelt urged Congress to establish maximum hours and minimum wages and abolish labour of children under 16.

France.—The Paris International Exhibition was opened by President Lebrun.

May 26 : **Egypt** was admitted a member of the League of Nations by the unanimous vote of the Assembly.

United States.—The worst labour trouble in the steel industry since 1919 resulted in 85,000 workers being on strike.

May 27 : **United Kingdom.**—London busmen resumed work on settlement of their grievances.

The threatened coal strike was averted.

Mr. A. P. Herbert's Marriage Bill read to the House of Commons for the third time.

League of Nations.—The Council of the League of Nations received declaration of British and French Governments on the neutrality of Belgium.

May 28 : **United Kingdom.**—Mr. Baldwin resigned as prime minister. H.M. George VI invited Mr. Neville Chamberlain to form a Cabinet. Mr. Chamberlain accepted.

H.M. the King approved of the bestowal of an earldom on Mr. Baldwin.

Oslo Convention.—Delegates of Norway, Sweden, Denmark, Finland, Holland, Belgium, and Luxemburg signed a pact in favour of the continuance of their trade relations, to be effective on July 1 for one year.

Spanish Civil War.—A ' White Book ', containing documents referring to alleged Italian aggression in Spain, was placed by the Spanish Government delegation before the League Council.

May 29 : **Spanish Civil War.**—The German battleship *Deutschland* patrolling the coast of Spain was bombed by a Spanish Government aeroplane ; 26 men were killed.

Eleven Insurgent aeroplanes raided Barcelona.

May 30 : **Spanish Civil War.**—The Spanish government vessel *Ciudad de Barcelona* was torpedoed and sunk in the Mediterranean.

United States.—Chicago police shot and killed 16 striking steel workers in battle with 1,500 Committee for Industrial Organization Unionists at Republic Steel Corporation's Works.

May 31 : **Spanish Civil War.**—As reprisal for the bombing of the *Deutschland*, German warships shelled Almeria. Both Germany and Italy decided to withdraw from the Non-Intervention patrol and to leave the Non-Intervention Committee.

Japan.—The Hayashi cabinet resigned, and Prince Konoye formed a new cabinet.

June 1 : **United Kingdom.**—Announcement of the withdrawal of the profits tax, ' National Defence Contribution '. The Civil List Bill passed its third reading.

Soviet Russia.—The deputy commisar of defence, M. Gamarnik, committed suicide.

United States.—Amelia Earhart and her pilot, Capt. Fred Noonan, set out on round-the-world flight.

June 3 : **United Kingdom.**—H.R.H. the Duke of Windsor married Mrs. Wallis Warfield in France. King George VI decreed that the Duke retains the title of ' Royal Highness ', which must not, however, be used by the Duchess or any children.

The International Labour Conference opened at Geneva.

Spanish Civil War.—General Mola, commander-in-chief of the Spanish Insurgent Army in northern Spain, was killed in an air-crash.

The British Government made proposals for a new coastal-patrol scheme to the three other participating Powers.

Germany.—The Pope, replying to a protest from the German Government on Cardinal Mudelein's speech against the German treatment of Catholics, refused to reprimand the Cardinal.

June 6 : **Germany.**—General Göring announced details of Germany's defence against air attack, and statistics for the air-defence personnel. Replies made to recent allegations of immoral conduct on the part of Catholic priests, stated that punishment had already been meted out.

Sanjak of Alexandretta.—Martial law was declared in the Sanjak after a general strike of Arabs and Armenians had protested against Turkish being made the official language in the Franco-Turkish pact concerning the future of the Sanjak.

June 7: **United Kingdom.**—Plans for merging private and public electricity supply organizations into 30 regional organizations were announced by the prime minister.

June 8: **Whaling.**—Representatives of nine governments interested in whaling signed an agreement for protection of the industry.

United States.—An air service from New York to Bermuda was announced.

Astronomy.—The longest solar eclipse of modern times was visible in the south Pacific.

June 9: **Holland** extended to Germany and Great Britain the privileges given to the Oslo States under the convention.

Soviet Russia.—On charges of treason, eight of the generals of the Russian Army were court-martialled and sentenced to death.

Coke.—A convention for the international control of the coke export trade was signed in London by Germany, Great Britain, Holland, Belgium, and Poland.

Mexico.—A two weeks' nation-wide oil strike against foreign companies ended.

June 11: **Tin.**—The International Tin Committee decided to retain the quota at 110 per cent. for the third quarter of 1937.

Russia.—At Moscow Marshal Mikhail N. Tukhachevsky and seven other generals of the Red Army were sentenced to death on charges of treason.

Belgium.—An amnesty law, granting full pardon to people accused of treason during 1914–1918, was passed.

France.—Bodies of Nello and Carlo Roselli found. Murder believed political: Carlo, ex-Geneva professor, editor of anti-fascist *Guistizia e Liberta*, had founded in Spain Italian 'Garibaldi' division of International Brigade.

June 13: **Spanish Civil War.**—Britain, France, Germany, and Italy reached agreement on provisions for the security of the fleets patrolling the Spanish coast, but return of Germany and Italy to Non-Intervention Committee was delayed.

Aviation.—The governor of the Straits Settlements, Sir Shenton Thomas, opened the Singapore Airport.

June 14: **Irish Free State.**—The Dáil Eireann was dissolved, after passing new constitution by 62 to 48 votes.

France.—The Bank of France raised its discount rate from 4 to 6 per cent. and its interest rate on advances from 5 to 7 per cent.

Bolivia.—The Bolivian government decided not to renew diplomatic relations with Paraguay.

Russia.—The execution of 20 more persons convicted of sabotage on the New Amur railway, in the Far East, was made known.

June 15: **United Kingdom.**—The Imperial Conference ended in London.

United States.—Employees in 19 mines of the Bethlehem Republic Steel companies and a Youngstown concern were called on strike to aid strikes in those plants.

June 16: **Bulgaria.**—The Queen of Bulgaria gave birth to a son, heir to the Bulgarian throne.

United Kingdom.—Sir John Simon, chancellor of the exchequer, submitted to the cabinet a new scheme for a tax on the profits on industry.

Germany.—The German National Church officially recognized by the State.

Soviet Russia.—A political purge of the White Russian Soviet Republic, involved almost all leading officials. The President of the White Russian S.S.R., also involved, committed suicide.

Spanish Civil War.—Germany and Italy returned to the Non-Intervention Committee and to participation in the coastal patrol.

June 17: **United States.**—After a conference with President Roosevelt, Miss Frances Perkins, Federal secretary of labour, appointed a mediation board to investigate steel strikes.

June 18: **India.**—Troops called out at Amritsar to quell communal disorders.

June 19: **India.**—German expedition to Nanga Parbat, highest Himalayan peak in the British Empire overwhelmed by avalanche; 16 killed.

June 20: **Spanish Civil War.**—Spanish insurgents captured Bilbao after a nine months' siege. Basque troops retired to Santander.

Russia.—Three aviators flew from Moscow *via* the North Pole to Vancouver, beating the long-distance flight record by 350 miles.

Germany.—Following elections in Bavaria, the Roman Catholic public schools were closed by the Government.

June 21: **France.**—M. Blum tendered the resignation of his cabinet.

Italian East Africa.—The expenditure of about £130 millions for public works was approved at a Cabinet meeting.

June 22: **France.**—M. Camille Chautemps formed a Cabinet.

United Kingdom.—The salaries of members of the House of Commons were raised to £600.

Spanish Civil War.—Consultations between France, Britain, Germany, and Italy, to determine the action to be taken after torpedo attacks on the German cruiser *Leipzig*, broke down.

Trinidad.—Strikes and riots. Marines landed to establish order.

June 23: **Spanish Civil War.**—Germany and Italy announced that they would withdraw their warships from the international control of the Spanish coast.

Holland.—Dr. Colijn, the Dutch premier, formed a new cabinet.

June 24: **North-West Frontier.**—In a White Paper, 'Tribal disturbances in Waziristan', the number of casualties was given as 163 killed and 440 injured.

Mexico.—Government expropriation of the National Railways of Mexico was announced.

June 26: **United States.**—Thousands of strikers returned to work as Bethlehem's Cambria plant was re-opened; 17,450 workers returned to steel mills in Youngstown district under protection of Ohio militia.

June 27: **Germany.**—The 200th anniversary of the founding of Göttingen University was celebrated.

Japan.—A Central Economic Council of 34 members was appointed to formulate a co-ordinated economic policy embracing both Japan and Manchukuo.

June 28: **International Chamber of Commerce.**—The ninth Congress of the International Chamber of Commerce opened in Berlin.

France.—A temporary moratorium on gold and foreign exchange payments was decided on.

June 29: **United Kingdom.**—The London County Council disapproved new scheme for the distribution of electricity.

The steam train *Coronation Scot* set up a new Empire record, touching 114 miles an hour on a speed test, and covering 158 miles in 119 minutes.

June 30: **Oslo Convention.**—The Belgian government undertook to apply to German, British, French, and American products the same reliefs from quotas granted to the Oslo States.

Aviation.—Britain regained the world altitude record, when Flight-Lieutenant Adam, of the Royal Air Force, reached 53,937ft.

July 1: **Germany.**—The Rev. Martin Niemöller, Berlin pastor, who led the fight against Nazi domination of German Protestantism, arrested and held for trial.

Irish Free State.—Mr. de Valera tied with combined total of other parties at the elections.

United Kingdom.—The longest electrically operated railway track in the country was inaugurated, from London to Portsmouth.

July 2: **Spanish Civil War.**—The Non-Intervention Committee met to hear views on the Anglo-French plan. Italy and Germany rejected the plan.

United States.—Miss Earhart and Capt. Noonan were missing in the Pacific on their world flight.

A substitute Bill to reform Supreme Court membership was introduced.

South-West Africa.—Naturalized Germans formed a 'Deutscher Sudwest Bund' to promote German language and culture while remaining loyal citizens.

July 3: **Lawn Tennis.**—At Wimbledon, the men's singles championship was won by D. Budge (U.S.A.); the ladies' by Miss D. Round (Britain).

July 4: **Germany.**—Fräulein Reitsch established a new world record for women by gliding 220m.

Portugal.—An attempt was made to assassinate Dr. Salazar, the premier, but he escaped unhurt.

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July 5: **Germany.**—World records were broken by a helicopter, which reached a height of 2,500 metres.

Iran; Iraq.—An agreement settling a frontier dispute was signed in Teheran.

July 6: **France.**—The discount rate of the Bank of France was lowered from 6 to 5 per cent.

United Kingdom.—Mr. Neville Chamberlain accepted the presidency of the League of Nations Union.

Aviation.—The Belgian Aero Club won the 25th balloon race for the Gordon Bennett cup.

The first joint crossings of the Atlantic took place, a British flying boat crossing from east to west and an American from west to east.

Sweden.—Prince Charles married Countess Elsa von Rosen.

July 7: **Spanish Civil War.**—From Madrid, government forces launched an attack and bombarded a strategically situated village.

India.—The Congress Party Working Committee resolved that Congressmen should be allowed to accept office.

Palestine.—The Report of the Royal Commission recommended separate Jewish and Arab States.

July 8: **Middle East.**—The Foreign Ministers of Iran, Iraq, Turkey, and Afghanistan signed a mutual non-aggression pact.

China.—Fighting broke out between Chinese and Japanese troops near Peking.

July 9: **Germany.**—Fräulein Feodora Schmidt beat the gliding record for women set up by Fräulein Reitsch.

July 10: **France.**—New Franco-German commercial and financial agreements were signed.

United States.—Sixteen-inch guns are to be provided for two new battleships which are being built.

July 11: **Spanish Civil War.**—Government forces captured the village Villanueva del Pardillo and the Sierra de la Cruz.

Mexico.—At Dolores, 50 bandits and 9 soldiers were killed in a fight.

France.—At Lisieux 300,000 pilgrims assembled for the inauguration of the Basilica St. Teresa.

July 12: **Belgium.**—M. Victor de Laveleye, Liberal minister of justice, resigned from the Belgian cabinet.

July 13: **Greece.**—The name Salonika was changed to Thessaloniki.

July 14: **Czechoslovakia.**—The Supreme Council for National Defence decided to raise a loan for perfecting the defence of the country.

Spanish Civil War.—The new British non-intervention plan was submitted to the States represented on the Non-Intervention Committee.

Russia.—Three Soviet airmen flew over the North Pole and set up a new long-distance record before landing in California.

Bolivia.—President Toro was deposed by an Army coup; Colonel Busch provisionally assumed the presidency.

July 15: **Astronomy.**—The occultation of Mars by the Moon and the near approach of Jupiter to the Earth took place.

July 16: **Aviation.**—The British and American flying boats which crossed the Atlantic on July 6 completed their return trips.

Spanish Civil War.—The new British non-intervention plan was accepted as a basis for discussion.

July 17: **United States.**—The United States Navy abandoned hope of finding Miss Earhart and Capt. Noonan.

Poland.—An attempt to assassinate Col. Adam Koc, leader of the Polish National Union, resulted in the death of the assailant; Col. Koc was unhurt.

London Naval Treaty.—Bilateral naval treaties between Great Britain and Germany, and Great Britain and Russia were signed.

India.—Serious railway disaster to Punjab-Calcutta express near Patna; over 100 killed, 60 injured.

July 18: **Spanish Civil War.**—Both sides celebrated the entry into the second year of the war by demonstrations of their resolution to win.

July 19: **Germany.**—A trade agreement between the Spanish Insurgent Government and Germany was announced.

Australia.—The Royal Commission on Australian Banking issued its report. The report states that the most desirable system at present is a strong central bank regulating the volume of credit.

China rejected Japan's demand that Nanking should cease 'provocative activities.'

United Kingdom.—The Methodist Conference at Bradford ended.

July 21: **Irish Free State.**—Mr. de Valera was re-elected president of the Executive Council by 82 votes to 52.

United Kingdom.—The House of Commons debated the proposals of the Royal Commission to divide Palestine between the Jews and the Arabs.

July 22: **United Kingdom.**—Lord Baldwin nominated the members of the Imperial Trust to administer the fund of £250,000 given as a tribute to Lord Baldwin's handling of the abdication crisis.

United States.—President Roosevelt's plan for the reform of the Supreme Court was rejected in the senate by 70 votes to 20.

July 23: **United Kingdom.**—The Matrimonial Causes Bill passed both Houses. The Bill provides for extending the grounds for both divorce and nullity proceedings.

Germany.—A new tax was imposed on men who are not required to serve in the military forces, as a special contribution to national defence.

July 24: **Germany.**—General Göring issued an order combining all firms with the right to exploit ores into a single concern, the 'Reichswerke A.G. für Erzbergbau und Eisenhütten Gen. Göring'.

July 25: **Spanish Civil War.**—Insurgent troops recaptured Brunete after a fierce battle. Brunete is 14m. west of Madrid.

Italy.—A 35,000-ton battleship, *Vittorio Veneto* was launched.

July 26: **Spanish Civil War.**—Difficulties over procedure in the Non-Intervention Sub-Committee were overcome and a White Paper was sent to all the Governments concerned.

United Kingdom.—The Defence estimates were passed in the House of Commons.

United States.—Steel workers battled day and night at Republic Steel Corporation's Cleveland works; one dead, 40 injured.

July 27: **United Kingdom.**—In the engineering industry, 500,000 workers received increase of wages and holidays with pay. This was the result of a conference of 37 trades unions.

The United States tennis team regained the Davis Cup after ten years.

Lord Camrose, proprietor of the *Daily Telegraph*, bought the *Morning Post*.

Germany.—Dr. Darré, minister of food supply and agriculture, with General Göring, published a decree that all wheat and rye grown in Germany must be handed over to the State authorities.

Poland.—Germans in Polish Upper Silesia were granted the privilege of using their own language in the courts.

British West Indies.—Riots in Barbadoes resulted in 6 deaths and 21 people injured.

Sino-Japanese War.—A Chinese regiment at Tungchow was annihilated by a Japanese aeroplane, artillery, and infantry attack.

July 28: **Northern Ireland.**—Their Majesties the King and Queen paid an official visit to Belfast. A number of outrages on the frontier took place and several customs houses were burned.

Sino-Japanese War.—Japanese aircraft bombed Peking.

July 29: **Egypt.**—H.M. King Farouk took the oath as King of Egypt at Cairo.

Sino-Japanese War.—Tientsin attacked by Japanese bombing planes; Nankai University destroyed.

France.—Railway accident at Villeneuve-St. Georges, 9 miles from Paris; 30 killed, 40 injured.

July 30: **League of Nations.**—The session of the Mandates Commission for the Palestine Partition Plan, opened.

Spanish Civil War.—The Non-Intervention Sub-Committee met to discuss replies to the British White Paper. No satisfactory decision was reached.

Poland.—The embargo on the export of wheat, rye, oats, bran, and flour was prolonged until July 31, 1938.

July 31: **Holland.**—Queen Wilhelmina opened the fifth world jamboree, in the presence of Lord Baden-Powell, the Chief Scout, and Lady Baden-Powell.

Aug. 1: **France.**—The United States War Memorial was unveiled at Montfaucon, France, by President Lebrun.

Sino-Japanese War.—Japanese troops drove Chinese troops from Tungchow, capital of Hopei.

Aug. 2: **France.**—The *Normandie* established a new westward crossing record of 3days 23hrs. 2mins. from Bishop's Rock to Ambrose Light.

Aug. 3: **Egypt.**—King Farouk approved the new cabinet of Nahas Pasha, who had resigned after Farouk took his oath on July 29th.

France.—The Banque de France reduced its discount rate from 5 to 4 per cent.

Switzerland.—The 20th Zionist Congress opened at Zürich.

Aug. 4: **India.**—The Viceroy, Lord Linlithgow, and Mr. Gandhi met for a conference.

Aug. 5: **United States.**—America retained the America's Cup. Mr. Vanderbilt's *Ranger* beat Mr. Sopwith's *Endeavour II* in the fourth consecutive race.

Aug. 6: **United States.**—A trade agreement for one year was concluded between the United States and Russia.

Spanish Civil War.—British, Italian, and French ships were bombed off the Spanish coast. Madrid was heavily shelled.

Aug. 7: **Spanish Civil War.**—A Greek ship was bombed off the Spanish coast, near Algiers.

United Kingdom.—The complete control of the Fleet Air Arm by the Admiralty resulted in the appointment of an assistant chief of naval staff (Air).

The permits of three German journalists in London were not renewed.

United States.—The senate accepted the Judicial Procedure Reform Bill for the Lower Federal Courts.

Aug. 8: **Denmark.**—Denmark formally took possession of Thule, the most northern station in Greenland.

Yugoslavia.—The premier, 8 ministers, the speaker, and 15 members of Parliament were excluded from all rights and privileges of the Orthodox Church because they voted for a Concordat with the Vatican, which gives Roman Catholics equality with members of the Orthodox Church.

France.—President Lebrun opened a new strategic railway tunnel in central Alsace.

Canada.—Mr. Hugill, attorney-general, announced his retirement from the Alberta Cabinet at the request of Mr. Aberhart, the prime minister.

Spanish Civil War.—In consequence of the bombing of ships leaving Algiers, the French government decided that vessels leaving the port shall be escorted by two aeroplanes.

Aug. 9: **Holland.**—The ninth biennial International Scout's Conference opened at The Hague.

Sino-Japanese War.—Japanese troops formally marched into Peking and took possession of the city.

Aug. 10: **United Kingdom.**—The War Office decided to allow soldiers who have completed 12 years with the colours to remain in the service.

Yugoslavia.—The Croats rejected the Concordat with the Vatican.

China.—The finance minister, Dr. Kung, signed an agreement with a group of French banks for the grant of a special credit.

Aug. 11: **Salvador.**—The government of the Republic of Salvador announced notice of withdrawal of membership of the League of Nations.

United Kingdom.—The Railway Staff National Tribunal announced a wage increase for railwaymen.

United States.—The House of Representatives adopted the Senate's Judicial Procedure Reform Bill concerning the Lower Federal Courts.

Switzerland.—The Zionist Congress decided to negotiate with Britain on the Palestine plan.

Sino-Japanese War.—Japan concentrated 32 warships at Shanghai. Nankow was set afire by Japanese artillery.

Aug. 12: **Iraq.**—Bagir-Sidqi, chief of the Iraqi General Staff, and the commander of the Royal Iraqi Air Force were assassinated at Mosul aerodrome.

United States.—President Roosevelt nominated Senator Hugo Lafayette Black to the Supreme Court in place of Mr. Justice Van Devanter, who retired.

Aug. 13: **United States.**—The views of the United States on the proposed termination of the Mandate in Palestine and the country's claim to be consulted were put forward by the ambassador.

Aviation.—Six Russian flyers were lost in the third Soviet attempt to reach the United States by flying over the North Pole.

Aug. 14: **Sino-Japanese War.**—Bombs intended for the Japanese flagship *Izumo* exploded in the International Settlement at Shanghai, killing many Europeans and crowds of Chinese who had assembled there for safety.

Aug. 15: **Germany.**—Berlin celebrated the seventh centenary of its foundation.

Aviation.—The Imperial Airways flying boat *Caledonia* crossed the Northern Atlantic in daylight in 16½ hrs.

Canada.—The Federal government appointed a Commission to revise the British North America Act, 1867.

Spanish Civil War.—The Insurgent Army gained considerable ground in a renewed thrust against Santander.

Sino-Japanese War.—The Japanese forces near Shanghai began an offensive, and Nanking was bombarded from the air. The British Foreign Office decided to evacuate all British Nationals.

Aug. 17: **Canada.**—The Federal government exercised its power of disallowance in regard to the three recent banking acts passed in Alberta.

Paraguay.—A new cabinet was formed following the elevation of Dr. Pavia to the Presidency.

Iraq.—A new cabinet was formed. Gamil al Madfai was premier and minister of defence.

United Kingdom.—A rise in the wages of dock workers was agreed upon.

Canada.—Government vetoed Bank Control Bill, passed by Alberta's Social Credit government.

Aug. 19: **Germany.**—The chief Berlin correspondent of *The Times* was expelled from Germany.

Portugal broke off diplomatic relations with Czechoslovakia.

Sino-Japanese War.—Japan rejected the British plan for the withdrawal of both Chinese and Japanese troops from Shanghai.

Aug. 20: **Turkey.**—The Turkish government met to consider steps to be taken to prevent recurrence of attacks by submarines of unknown nationality in Turkish waters on Spanish ships.

Aug. 21: **British Empire.**—H.M.S. *Leander* annexed three uninhabited islands off Pitcairn Island for Great Britain. The islands have smooth lagoons suitable for landing-places for seaplanes.

Aviation.—In the international air race from Istres to Damascus and back to Paris, Italy gained the first three places, and so all the prize money. Great Britain was fourth.

Caledonia, the British flying-boat, completed the fastest ocean crossing of the experimental series of flights across the North Atlantic, averaging 170m.p.h.

Aug. 22: **Jewish Problems.** The Jewish Agency for Palestine decided to support the Zionist Congress's decision to negotiate with the British Government for a Jewish State in Palestine.

Canada.—A moratorium, to last six months, was announced by Mr. Aberhart, prime minister of Alberta.

Italy.—The *Littorio*, sister ship of the *Vittorio Veneto*, was launched.

Aug. 23: **Egypt.**—The engagement was announced of King Farouk to Mlle Sasi Naz Zulfikar.

League of Nations.—The Mandates Commission put forward a compromise plan for the future of Palestine.

Germany.—The International Rotary Movement was banned for National Socialists.

South Africa.—Plans were announced to reclaim land at Capetown, thereby doubling the area of the city.

Aug. 24: **Sino-Japanese War.**—More than 50,000 Japanese were landed in Shanghai. Air-raids by Japanese machines on the Chinese quarter resulted in many deaths and devastating fires. Kalgan, capital of Chahar Province, fell to the Japanese.

Aug. 25: **Spanish Civil War.**—Santander fell to the Insurgent forces.

Sino-Japanese War.—The Japanese took Nankow pass, despite determined resistance from the Chinese.

The Japanese announced that their Navy would blockade the whole Chinese coast, but would not interfere with foreign ships.

Aug. 26: **Sino-Japanese War.**—Sir Hughe Knatchbull-Hugessen, H.M. ambassador to China, was wounded in an attack on his car by Japanese aeroplanes.

India.—The government of India announced the peace terms imposed on the Waziristan tribesmen in the North-West Frontier campaign.

Aug. 29: **Sino-Japanese War.**—H.M. government sent a strong protest to the Japanese government demanding an apology, redress, and the assurance of non-recurrence of such events as the wounding of the British ambassador.

Terms of a non-aggression pact between China and U.S.S.R. were announced.

Near Shanghai, 3 passengers and 6 of the crew of the Dollar liner *President Hoover*, were wounded when ship was bombed by Chinese planes.

Aug. 30: **Germany.**—The National Socialist Party organized a congress of Germans from abroad, which opened in Stuttgart.

Russia.—A drastic purge of the Young Communist League began.

The president of the Ukrainian S.S. Republic committed suicide.

Palestine.—The Arab mayor of Jerusalem proposed plans for the division of Jerusalem into two municipalities, one Jewish, the other Arab.

Rumania.—A conference of the three nations of the Little Entente—Rumania, Yugoslavia, and Czechoslovakia—was held.

Aug. 31: **Canada.**—Mr. Aberhart rejected the Federal government's decision regarding the unconstitutionality of the Alberta Bank Acts.

France.—The French government issued a decree creating a national railway company.

Sept. 1: **Great Britain.**—Sir Malcolm Campbell recaptured the world's speedboat record for the measured mile with a speed of 126·325 miles per hour.

South Africa.—The Union government concluded an agreement to barter wool and other products to the probable amount of Germany's purchases from the Union.

Sino-Japanese War.—Conflict spread by Japanese planes from Nankow to Canton, over an area 2,000 miles long.

Sept. 2: **France.**—The French bank rate was reduced from 4 to 3½ per cent.

United States.—President Roosevelt signed the Wagner-Steagall Housing Bill, which authorizes the Federal Government to lend local authorities £100 millions for slum clearance and providing modern dwellings for the poorest people.

Great Britain.—Sir Malcolm Campbell beat his own record with 129·5 miles per hour on Lake Maggiore.

Sept. 3: **Japan.**—The Emperor, in a speech at an emergency meeting of the Diet, expressed hope for the stabilization of eastern Asia, and regretted that the Chinese Government had failed to understand Japan's intentions. Japan voted a further £117 millions for the war against China.

Spanish Civil War.—Government forces captured the town of Belchite, the last important position separating them from Saragossa.

Britain sent 4 destroyers to Mediterranean to operate against 'pirate' submarines.

China.—Province of Chahar declared its independence.

Sept. 4: **Germany.**—The committee of German Rotary Clubs decided to dissolve their clubs on Oct. 15.

Palestine.—One of the most prominent members of the Arab National Defence Party was killed in Haifa.

Sept. 5: **United Kingdom.**—The British National Gliding competition ended. The longest flight was 86m.

Sept. 6: **United Kingdom.**—The Board of Trade announced improvements in the working conditions of British seamen, including the provision of sleeping accommodation amidships or aft instead of forward, and of hospital accommodation for the crew.

Sept. 7: **Italy.**—A treaty of friendship between Italy and Yemen was announced.

Sino-Japanese War.—Japan sent an interim reply to the British note concerning the wounding of H.M. ambassador.

United States.—Ab Jenkins, motorist, broke world records for 50, 100, 200, and 500 kilometres and for 100 and 200m.

Russia.—A second note, accusing Italy of responsibility for sinking merchant ships in the Mediterranean and demanding redress, was sent to Italy.

Belgium.—M. van Zeeland repudiated the accusations made against him of receiving pay from the National Bank after assuming the premiership. The chamber of deputies passed a vote of confidence in him.

Germany.—The annual congress of the National Socialist Party opened at Nuremberg.

Sept. 8: **Australian** rearmament programme announced, to include more heavy coast defence guns, radio stations, and re-conditioning of warships.

Japan.—In Tokyo the House of Peers approved the £120 million budget for prosecuting the war.

Sept. 9: **China.**—At Nanking a supreme National Council was formed, and General Pai Chun-shi of Kwangtung, was made commander of the Shanghai area.

Sept. 10: **Mediterranean Conference.**—The Nyon Nine-Power Conference agreed on anti-piracy patrols in the Mediterranean.

Sept. 11: **Aviation.**—Mr. C. E. Gardner, in a Percival Mew Gull, won the King's Cup Air Race at an average speed of 233·7m. per hour.

Yugoslavia.—The first Belgrade Fair opened; it will be held twice a year.

United States.—The United States lawn tennis championships resulted in the men's singles being won by Donald Budge (U.S.A.), and the ladies' singles being won by Señorita Anita Lizana (Chile).

United Kingdom.—The Trades Union Congress closed.

Sept. 12: **Palestine.**—At the Arab National Congress the proposed partition of Palestine was rejected by the Arab leaders, who demanded that Jewish immigration should be stopped, and Arab land be not transferred to Jews.

Sept. 13: **League of Nations.**—The Assembly met at Geneva. The Sino-Japanese conflict and the Spanish Civil War were among the subjects discussed.

Sept. 14: **Holland.**—Dr. Patijn was appointed foreign minister in the cabinet.

United States.—President Roosevelt put into application restrictions on the export of war materials to China and Japan.

Mediterranean Conference.—The Nyon conference ended with agreement for the adoption of an 'anti-piracy patrol'.

Sept. 15: **Sino-Japanese War.**—General Terauchi was appointed commander-in-chief of the Japanese forces in North China and General Matsui to the chief command in the Shanghai area.

Sept. 16: **Sino-Japanese War.**—The Chinese left wing had to retreat before the Japanese forces south of Peking.

United States.—A hitherto unexplored plateau, 'Shiva's Temple', in the Grand Canyon of Arizona, was visited by an expedition working under the American Museum of Natural History.

Sept. 17: **Mediterranean Conference.**—The Nyon conference decided to extend anti-piracy control to cover attacks on neutral vessels by air.

Sept. 18: **United States.**—The 150th anniversary of the signing of the American Constitution was celebrated.

Sept. 20: **East Africa.**—The Commission on Higher Education recommended the establishment of a university college for East African natives.

League of Nations.—The Assembly voted against re-electing Spain and Turkey. Iran was elected to Turkey's seat and Peru to Chile's seat.

Sept. 21: **Spanish Civil War.**—The Non-Intervention Board announced changes to improve the non-intervention observation scheme.

Sino-Japanese War.—Japanese aeroplanes again bombed Nanking and Canton.

Mediterranean Conference.—Italy expressed willingness to discuss the possibility of entering into the anti-piracy patrol.

Sept. 22: **Rumania.**—The government took steps against foreigners living in Rumania, and ordered industrialists to employ 75 per cent. pure-blooded Rumanians in unskilled work and 50 per cent. in administrative and technical positions.

Japan expressed deep regret for the wounding of H.M. ambassador to China on Aug. 26.

Sino-Japanese War.—Two successive air-raids were made on Nanking by Japanese 'planes.

Spanish Civil War.—Count Ciano, Italian foreign minister, assured the British chargé d'affaires in Rome that no more Italian volunteers would be sent to Spain.

Sept. 23: **Sino-Japanese War.**—Japan captured Pao-tingfu and Tsangchow. These were the two keystones of the defence in North China. Canton was severely bombed by Japanese 'planes, causing at least 3,000 casualties.

Sept. 25 : **Germany.**—Signor Mussolini reached Munich on a visit to Herr Hitler.

Egypt.—In Alexandria 22 persons were trampled to death and 50 injured in a crowd when 100,000 paraded in honour of King Farouk I.

Sept. 26 : **Denmark.**—H.M. King Christian X opened the Storstroem Bridge, the longest in Europe, connecting the islands Falster and Masnedö.

League of Nations.—The new League Assembly Hall was opened.

Sept. 27 : **League of Nations.**—A decision was made to adopt a strongly worded resolution condemning the bombing of open towns in China.

Turkey.—General Ismet Inönü resigned the premiership, and was replaced by M. Dhelal Bayer.

Palestine.—Over 100 persons arrested at Nazareth, following shooting of a district commissioner and a British constable by Arabs.

Sept. 28 : **Aviation.**—The Imperial Airways flying boat *Cambria* crossed the North Atlantic in record time from west to east, taking only 10hrs. 35m.

Sept. 29 : **Vatican.**—H.H. the Pope issued an encyclical reaffirming the position of the Church as the bulwark against Communism.

Sino-Japanese War.—The Japanese armies occupied the walled town of Tungkwan. Sienshien fell to the Japanese.

Russia.—The purge of Trotskyist and wrecking elements resulted in the removal of president or premier or both from all but one of the 11 Soviet republics.

Germany.—Signor Mussolini left Germany on the conclusion of his visit.

United Kingdom.—Sir Harry Twyford, alderman of Cripplegate, was chosen Lord Mayor of London, succeeding Sir George Broadbridge.

Sept. 30 : **Germany.**—The theological seminaries of the German Evangelical Church were dissolved and forbidden to hold theological examinations. The reason stated was that these activities were directed against the State.

United Kingdom.—The prime minister, Mr. Chamberlain, opened the campaign for a fitter Britain.

Mediterranean Conference.—A draft agreement was initialled by representatives of France, Italy, and Great Britain, arranging the anti-piracy patrol in the Mediterranean.

Canada.—Mr. Roosevelt received enthusiastic welcome on his visit to Victoria, British Columbia.

Oct. 1 : **United Kingdom.**—The *Morning Post* was amalgamated with the *Daily Telegraph.*

Palestine.—Drastic steps to end the campaign of terrorism were taken by the Government of Palestine. Mufti of Jerusalem deprived of presidency of Moslem Council.

Canada.—The Alberta government introduced a measure to control the liberty of the Press. Trade treaties between Australia and Canada and New Zealand and Canada were announced.

Oct. 2 : **France.**—The French cabinet decided to meet the economic crisis by modifying the 40-hour week and increasing production.

Spanish Civil War.—An Anglo-French note, suggesting a consultation on evacuating foreign volunteers from Spain, was sent to Italy.

Spanish insurgents swept through Covadonga towards Gijon, government stronghold on Northern (Asturian) front.

Sino-Japanese War.—The Japanese penetrated the Chinese line on the Shanghai front.

League of Nations.—The full Assembly rejected the resolution of the Political Committee that early withdrawal of foreign volunteers in Spain should be secured.

United States.—Justice Hugo Black denied that he was a member of the Ku Klux Klan or had any prejudice against Catholics, Negroes, or Jews.

Australasia.—The Australian prime minister announced new trade treaty with Canada. New Zealand also announced new trade treaties with other Dominions.

Brazil.—A 90-day 'state of war' was proclaimed to cope with 'renascent communism'.

Oct. 3 : **Belgium.**—An agreement for the division of traffic between French and Belgian ports was signed.

Oct. 4 : **United States.**—A threatened strike of 250,000 railway employees was averted by wage increases.

Argentina.—Dr. Roberto Oritz, National Coalition candidate, was elected president.

Oct. 5 : **United States.**—President Roosevelt stated that the country is prepared to join in efforts to maintain peace.

Oct. 6 : **United States.**—The United States State Department declared Japan to be the aggressor in the Sino-Japanese conflict.

League of Nations.—A resolution was accepted inviting the Powers signatory to the Nine-Power Treaty to meet. The Nine-Power Treaty guaranteed the political independence of China. This resolution affirmed the League's moral support of China.

New Zealand.—A 'Trade and Ancillary Payments Agreement' with Germany was ratified.

The International Sugar Council decided that export quotas shall be maintained.

Oct. 7 : **United Kingdom.**—Sir Charles Forbes was appointed commander-in-chief of the Home Fleet, succeeding Sir Roger Backhouse.

Canada.—The Ontario Provincial elections resulted in a Liberal victory.

Lieutenant-Governor of Alberta withheld Royal assent to several bills passed by Social Credit Government.

Oct. 8 : **United Kingdom.**—The Conservative Party Conference, begun on the 7th, ended.

The Labour Party Conference, which opened on the 3rd, ended.

Oct. 9 : **Sino-Japanese War.**—Japan's reply to the accusation of violating the Nine-Power Treaty was that as she had no territorial designs in China, she was not violating the Treaty. The Italian ambassador in Tokyo expressed Italy's moral support of Japan.

Spanish Civil War.—Italy refused, in her reply to the Anglo-French note, to join in any discussion with regard to the withdrawal of volunteers from Spain.

Yugoslavia.—The Concordat between Yugoslavia and the Holy See was abandoned, owing to the troubles which it caused with the Orthodox Church.

Oct. 10 : **Hungary.**—The Opposition parties in the Hungarian cabinet pressed for a restoration of the monarchy.

Danzig.—The National Socialist leader in Danzig announced a campaign to reduce the Jewish people in Danzig to the same state as those in Germany.

Japan.—Permits were required for the entry into Japan of 300 categories of foreign goods, the purpose being to restrict the imports bill.

Sino-Japanese War. — General Terauchi turned the flank of the last Chinese defences in Southern Hopei Province and entered Shih-Kiachwang fortress.

Oct. 11 : **Italy.**—All activities of Fascist groups abroad were transferred to the Italian under-secretary for foreign affairs.

Libya.—Reinforcements of Italian troops were sent to Libya.

Oct. 12 : **Germany.**—A new explanation of the *Hindenburg* disaster was put forward, after experiments with a model airship.

United Kingdom.—Lord Nuffield presented £1 million to Oxford University for a new college, in addition to a site.

France.—The Treaty of Franco-Yugoslav friendship was renewed for a third five-year period.

United States.—Extraordinary session of Congress summoned by Mr. Roosevelt for Nov. 15.

Oct. 13 : **Japan.**—A war loan of 200 million yen (£11,600,000) was floated in Tokyo.

United Kingdom.—The government decided to pay 90 per cent. of the cost of air-raid precautions, leaving only 10 per cent. to be paid by the local authorities.

A national empire migration and development conference, which met to discuss migration from Britain to the rest of the Empire and the development of the Empire by British people, ended.

Spanish Civil War.—France and Great Britain accepted the Italian proposal to discuss the withdrawal of volunteers from Spain at the Non-Intervention Committee, and not, as suggested, by three-power discussions.

Belgium.—Germany guaranteed the inviolability of Belgian territory.

Oct. 14 : **United Kingdom.**—Proposals for Scottish administration reforms included the administration of many offices from Edinburgh, the London office to be a parliamentary and liaison office.

Palestine.—Five members of the Arab Higher Committee who had left the country were forbidden to return. Bomb outrages occurred and a train was derailed.

Sino-Japanese War.—Japanese forces captured Suiyuan, the capital of the province of the same name, and continued to advance.

Ethiopia.—It was announced in Rome that fighting in September had resulted in loss of 102 Italian troops and a number of native troops.

Oct. 15: **Sino-Japanese War.**—Chinese troops recrossed the Great Wall at Lanyuan and captured the town of Lanyuan.

Egypt.—Capitulations were formally abolished with the entry into force of the Montreux Convention.

Palestine.—Further violence in Jerusalem led to institution of curfew.

Oct. 16: **Spanish Civil War.**—The Non-Intervention Committee met to consider plans for the withdrawal of foreign volunteers from Spain. A general agreement on the points to be discussed was obtained and the committee adjourned.

Palestine.—The Grand Mufti of Jerusalem escaped from the Mosque of Ombar to Syria. Extremists set fire to buildings at airport at Lydda.

Oct. 19: **United Kingdom.**—The Joint Committee of the Cotton Trade Organization approved a five-year reorganization for the cotton industry.

Oct. 20: **United Kingdom.**—The status of the Territorial Army was improved by several important reforms, including the creation of a post of deputy director of the Territorial Army.

Egypt.—Aly Maher Pasha was appointed chief of the Royal cabinet, a post which had been vacant since May 1936.

Oct. 21: **Italy.**—The Fascist Grand Council took measures to extend conscription to the Italian Air Force and to improve the Army and Navy.

Danzig.—The Catholic (Centre) Party was dissolved by the police.

Spanish Civil War.—Gijon, on the Asturias front, fell to the Insurgents.

Palestine.—Sir Charles Tegart, formerly of the Bengal Police, was appointed police adviser for Palestine.

Oct. 22: **Spanish Civil War.**—Even after important concession from Italy, the Non-Intervention Committee, met to discuss the withdrawal of volunteers from Spain, could not reach definite agreement.

United Kingdom.—The King's speech on the prorogation of Parliament was read in the House of Lords by the Lord High Chancellor, Viscount Hailsham.

Oct. 23: **United Kingdom.**—Canon 'Dick' Sheppard was elected Lord Rector of Glasgow University.

Oct. 24: **Aviation.**—Miss Jean Batten arrived in Croydon after breaking the Australia-England record by 14hrs. 10mins.

Australia.—The Lyons Ministry scored a decisive victory in the general election for the Commonwealth Parliament.

Oct. 25: **Czechoslovakia.**—All political meetings were banned until further notice. This followed an incident when Germany protested at the Czech police's treatment of a meeting of Germans.

Belgium.—M. van Zeeland resigned from the premiership in order to defend himself in the inquiry which was opened at the National Bank of Belgium.

Oct. 26: **United Kingdom.**—King George VI opened his first Parliament.

Aviation.—The French flying boat, *Lieutenant de Vaisseau Paris*, established a new long-distance record. She flew from French Morocco to Brazil, a distance of 3,612m.

Oct. 27: **Sino-Japanese War.**—The Japanese claimed to have captured the key of the eastern entrance to Shansi.

Far Eastern Conference.—Japan refused to join the conference on the grounds that she had not violated the Nine-Power Treaty.

Oct. 28: **Italy.**—The 15th anniversary of the 'March on Rome' was celebrated in Rome.

France.—The request of the French Government to open the Paris Exhibition again in 1938 was granted by the International Exhibition Bureau.

Syria.—Floods washed away the town of Dmeir; 100 people were missing. The Damascus–Baghdad highway was cut by heavy waters.

Oct. 29: **Italy.**—The fourth town to be erected on the drained Pontine marshes was inaugurated by Signor Mussolini.

Far-Eastern Conference.—Germany refused to attend a conference on the problem in the Far East, on the grounds that she was not a party to the Nine-Power Treaty.

Sino-Japanese War.—Japan shelled the Shanghai International Settlement, killing three British soldiers and wounding three.

Morocco.—French Foreign Legion and Senegalese troops established military control in the chief cities to crush a reputed plot to overthrow French protectorate and establish Arab kingdom.

Oct. 30: **Spanish Civil War.**—The Non-Intervention Committee was able to report some progress in the discussions on the withdrawal of volunteers from Spain, but agreement was not reached between Russia and Germany, Italy, and Portugal. A British steamer, *Jean Weems*, was sunk off the Catalan coast by bombs dropped from a seaplane. No lives were lost.

Italy.—The Italian ambassador was recalled from Paris.

Oct. 31: **Spanish Civil War.**—The Government announced the replacement of Valencia by Barcelona as government capital.

Nov. 2: **Paraguay.**—Revolt of Corrales regiment led to establishment of martial law in Asuncion.

Nov. 3: **Holland.**—The Government announced measures to increase the revenue; and also a plan for simplifying spelling.

United States.—The Republican Party won a decisive victory in the New York City elections and Mr. La Guardia was re-elected Mayor.

Far-Eastern Conference. — M. Spaak, the Belgian foreign minister, opened a conference of 19 nations to discuss affairs in the Far East. Japan and Germany declined to be represented.

Brazil.—Coffee markets closed and price-control programme abandoned.

Nov. 4: **Italy.**—The *Enciclopedia Italiana*, a work in 36 volumes modelled on the *Encyclopaedia Britannica*, was completed, the last volume being published.

Spanish Civil War.—Lord Plymouth, chairman of the Non-Intervention Committee, was authorized to approach both sides in the Spanish conflict on the withdrawal of foreign volunteers from Spain. Mr. Chamberlain announced that agents had been appointed to look after British interests in parts of Spain in the hands of the Insurgents.

United Kingdom.—Captain Eyston captured the world's 12-hr. record at Bonneville, Utah, at a speed of 163·68 miles per hour.

Nov. 5: **Japan** relinquished extraterritorial rights in Manchukuo, and transferred the administration of the South Manchurian Railway zone to the Manchukuan authorities.

Poland.—Germany and Poland reached a reciprocal agreement on the treatment of the Polish minority in Germany and of the German minority in Poland.

Nov. 6: **Italy** announced her adhesion to the German-Japanese 'Anti-Communist Pact'.

Sino-Japanese War. — Japanese troops occupied the town of Changteh, 300m. from Peking.

Haiti.—Reported massacre by Dominicans of over 1,000 Haitian subjects in the Dominican Republic.

Nov. 7: **Sino-Japanese War.**—Marshal Chiang Kai-shek declared China's intention to resist Japan to the end. Japan resumed her advance on the Yellow river.

Far-Eastern Conference.—The Conference meeting at Brussels sent a conciliatory note to Japan suggesting a working committee to facilitate the discussion of the situation between Japan and China.

Nov. 8: **Sino-Japanese War.**—The *Blue Express*, a Chinese train, was bombed and wrecked by Japanese aircraft, which killed and wounded more than 200 people.

Spanish Civil War.—The Insurgent authorities assumed full responsibility for the sinking of the *Jean Weems*, and promised compensation.

United Kingdom.—The British Iron and Steel Federation announced stabilization of iron and steel prices until the end of 1938.

Italy.—The participation of Italy in the German-Japanese anti-Communist pact led to a difficult situation between Italy and Russia.

Paraguay.—The 'state of war' decreed as the result of the recent unsuccessful rebellion was lifted.

Nov. 10: **Brazil.**—A new corporative constitution was proclaimed in Rio de Janeiro.

Sino-Japanese War.—After capturing Taiyuanfu, Japanese troops captured Pingyao, 50m. south.

Nov. 11: **Sino-Japanese War.**—Mr. Pembroke Stephens, special correspondent of the *Daily Telegraph*, was killed by Japanese machine-gun fire.

Aviation.—A new world-speed record for aeroplanes was set up in Germany when Dr. Wurster reached a speed of 379 miles per hour.

United Kingdom.—Terms of coal bill, by which all coal in Great Britain, known or unknown, will pass into the ownership of the State on July 1, 1942, were announced by the government.

Nov. 12: **France.**—The Bank of France decided to reduce the bank rate from 3½ to 3 per cent.

United Kingdom.—The Labour Paid Holidays Bill was rejected by one vote.

Far-Eastern Conference.—Japan sent an uncompromising reply to the note of the 7th. She declared that negotiations should only take place directly between China and herself.

Australia.—The composition of the new senate was announced as having 20 senators for the Ministry against 19 for Labour.

Nov. 13: **Far-Eastern Conference.**—Dr. Wellington Koo, Chinese delegate to the Conference, asked that, in view of Japan's reply to the note, sanctions should be put in force against her, and that help should be extended to China.

Nov. 14: **Palestine.**—Six Arabs and one Jew were killed in outbreaks near Jerusalem.

Nov. 15: **Italy.**—The zones to be patrolled in the Mediterranean by Italian ships under the Nyon anti-piracy agreement were published.

United States.—In his message to Congress, President Roosevelt recommended a four-point programme of work, the farm production control bill, the wage and hour bill, the government reorganization programme, and the regional planning bill.

Far-Eastern Conference.—The Conference rejected the arguments cited by the Japanese government as a refusal to negotiate with the Conference.

Nov. 16: **Spanish Civil War.**—Russia accepted the British plan of July 15 for withdrawal of volunteers from Spain.

United Kingdom.—Mr. Oliver Stanley, president of the Board of Trade, announced the creation of a 'shadow' organization to control Britain's food supplies. King Leopold of the Belgians arrived in London on a State visit of three days.

Spain.—Sir Robert Hodgson was appointed British agent to the Insurgent government.

India.—Sporadic fighting by the Fakir of Ipi's supporters prevented the withdrawal of troops from the North-West Frontier.

China.—The Chinese decided to transfer the capital to Chungking, but the ministries of foreign affairs and finance were established at Hankow.

Nov. 17: **Rumania.**—M. Tatarescu announced that he had succeeded in forming a government with the co-operation of the National Democratic Party.

Vatican.—It was announced that five new cardinals will be made, bringing the Sacred College up to 69 members, one short of its full complement.

Germany.—Viscount Halifax went to Germany to attend the International Hunting Exhibition and to talk with Herr Hitler and other Nazi leaders.

Nov. 18: **United Kingdom.**—Formal announcements were made that negotiations for an Anglo-United States trade treaty were in contemplation.

Australia.—A new conversion loan amounting to £11,409,865 was issued in London.

Nov. 19: **United Kingdom.**—Captain Eyston, the British racing motorist, beat the world's land-speed record with 311·42 miles per hour at Utah.

The Autumn Session of the Church Assembly concluded.

India.—The existing trade agreement between India and Japan was extended until March 1940.

Nov. 20: **Aviation.**—Flying Officer Clouston and Mrs. Kirby-Green returned to Croydon from the Cape, having made the double journey in the record time of 5days 17hrs. 28mins.

Sino-Japanese War.—Continuing their advance on the capital, the Japanese captured Soochow.

Italy.—The Duke of Aosta replaced Marshal Graziani as Viceroy of Abyssinia.

Nov. 22: **France.**—The Duc de Guise, Pretender to the throne of France, issued a manifesto declaring that he had decided to 'claim the throne of his fathers'.

Nov. 23: **Siam.**—A treaty of commerce and navigation between Great Britain and Siam was signed.

Aviation.—M. Codos flew from Paris to Santiago, a distance of 12,500km. in 58hrs. 41mins.

France.—A plot against the Republic was discovered and foiled; the plotters were known as the 'Cagoulards'.

Nov. 24: **Far-Eastern Conference.**—The Conference decided to adjourn *sine die.*

Belgium.—M. Janson, Liberal, formed a coalition cabinet with the aid of Catholics and Socialists.

Sino-Japanese War.—Canton was bombed by Japanese aircraft, and pamphlets were dropped warning the civilians to abandon the city.

Nov. 26: **Germany.**—Dr. Schacht resigned his post as minister of economics, and his duties were temporarily taken over by General Göring, who became virtual economic dictator.

Nov. 27: **Sino-Japanese War.**—Japan took over all the Chinese Government organs in the Shanghai International Settlement and French Concession.

Germany.—The war minister and the minister of the interior issued regulations to enable the instant mobilization of every man fit to bear arms.

Palestine.—An Arab leader was hanged for terrorism.

Cuba.—Wind and rain in the Oriente Province caused 40 deaths and great damage to fruit, coffee, and sugar crops.

Nov. 28: **Egypt.**—An attempt made to assassinate Nahas Pasha, the premier.

Spanish Civil War.—The Insurgent Government declared a blockade of the whole coast of Government Spain and of the island of Minorca.

Nov. 29: **Australia.**—The composition of Mr. Lyons' new cabinet was announced; it is a coalition of the United Australia and Country Parties.

Manchukuo.—Italy officially recognized the status of Manchukuo as an independent State.

Alexandretta.—The new régime in the autonomous Sanjak of Alexandretta entered into force.

United States.—President Roosevelt asked Congress to provide the necessary legislation for a five-year housing programme.

Nov. 30: **Japan** gave official recognition to the Insurgent Government in Spain.

South Africa.—The Government notified the Italian Government of its decision not to continue to subsidize Italian shipping lines.

United Kingdom.—M. Chautemps, premier, and M. Delbos, foreign minister of France, left London after a visit to discuss the international situation with Mr. Chamberlain and Mr. Eden.

Dec. 1: **Germany.**—Dr. Otto Meissner was created State minister, a new appointment.

Spain.—The Spanish Embassy in London handed to the Foreign Office a reply to the Non-Intervention Committee's note concerning the withdrawal of foreign volunteers from Spain.

Dec. 2: **Manchukuo.**—The Manchukuo Government extended formal recognition to the Insurgent Government in Spain.

Malaya.—The Colonial Office announced quotas on imports of certain classes of artificial silk and cotton goods.

United Kingdom.—Changes in the Army Council included the appointment of Major-General Viscount Gort as Chief of Imperial General Staff, and Major-General Liddell as Adjutant-General to the Forces.

Belgium.—A vote of confidence in the Government was passed in the Chamber of Deputies.

Dec. 3: **France.**—The Defence Budget was unanimously approved by the Chamber of Deputies.

Brazil.—The president issued a decree dissolving all political parties.

Palestine.—Sir Harold MacMichael was appointed High Commissioner.

Sino-Japanese War.—A victory parade staged by the Japanese, in spite of protests, in the International Settlement at Shanghai, was the occasion of a number of incidents.

Dec. 4: **Sino-Japanese War.**—A British steamer was attacked by heavy machine-gun fire when approaching a Japanese-controlled island near Shanghai.

Dec. 6: **India.**—The first sitting of the Federal Court of India was held at New Delhi; this is the first central judicature to exist in the Indian Empire.

South Africa.—The first meeting of the Native Representative Council was held in Pretoria. The council is a purely advisory body permitted to make recommendations on all laws affecting natives.

Dec. 7: **Poland.**—M. Delbos, French foreign minister, concluded a visit to Poland.

Spain.—Portugal appointed an official agent in Insurgent Spain.

Dec. 8: **Sweden.**—King Gustav X celebrated the 30th anniversary of his accession to the throne.

Dec. 9: **League of Nations.**—The Economic Committee of the League concluded its session, and its report includes the formulation of a number of principles relating to access to raw materials.

Dec. 10: **Italy.**—The Yugoslav premier, M. Stoyadinovich, concluded an official visit to Italy.

International Tin Committee.—This committee fixed the quota for the first three months of 1938 at 70 per cent.

Austria.—The Austrian cabinet passed a resolution dissolving the War Invalids Fund, which had enjoyed the revenues of the Habsburgs since 1919, and restoring the property to the Habsburgs.

United Kingdom.—A train wreck at Castlecary, Scotland, resulted in the loss of 25 lives.

United States.—The House of Representatives passed the Farm Bill, which is based on soil conservation and domestic allotment acts, and provides for the control of certain crops.

Dec. 11: **Sino-Japanese War.**—The Japanese took one of the gates of Nanking.

Italy.—Signor Mussolini declared the intention of Italy to leave the League of Nations.

Dec. 12: **Sino-Japanese War.**—Japanese aeroplanes sank the United States gunboat *Panay*, with the loss of three lives. She was proceeding up the Yangtze river to be out of range of the Japanese guns shelling Nanking. The British gunboat *Ladybird* was shelled from shore batteries and three other gunboats were attacked from the air. Three American tankers were set on fire by bombs.

Russia.—The first general elections to be held in Russia since the Revolution took place. Elections were confined to government-approved candidates, who were all returned. Nearly 97 per cent. of the citizens entitled to vote did vote

Dec. 13: **Germany.**—An agreement was signed in London extending the German Credit Agreement for a further period of one year.

Sino-Japanese War.—Nanking fell into the hands of the Japanese forces.

Dec. 14: **Sino-Japanese War.**—Japan sent an apology and promise of reparation to the United States in regard to the sinking of the *Panay*.

Dec. 15: **Sino-Japanese War.**—Japan sent an apology for the shelling of British ships on the 12th, and assured the British government that steps had been taken to prevent the recurrence of such incidents.

Dec. 16: **Italy** resigned from the International Labour Office.

Switzerland elected M. Baumann president for 1938, and Federal Councillor Etter, vice-president.

Russia.—Eight Soviet officials were executed.

Dec. 17: **Shipping.**—Representatives of 11 countries agreed to join the British tramp shipowners' voluntary co-operation scheme.

France.—M. Delbos returned to France on the conclusion of his visit to the Little Entente countries.

Dec. 18: **United States.**—The President approved the construction of two new 35,000-ton battleships.

Dec. 20: **Palestine.**—Mr. Eden informed the House of Commons that a warning had been given to the Italian ambassador that Great Britain was well aware of the Italian propaganda in Palestine, and that its continuance might prejudice relations between the two countries.

Rumania.—The Government Coalition failed to obtained a majority at the general elections.

China.—Sir A. J. K. Clark Kerr was appointed H.M. ambassador to China in place of Sir Hughe Knatchbull-Hugessen.

Dec. 21: **Spanish Civil War.**—Government forces recaptured Teruel after a six days' battle.

Dec. 22: **France.**—The French Social Party was declared illegal, as it was a continuance of the dissolved 'Croix de Feu'. Col. de la Roque, its founder, was fined 24,000 francs.

United Kingdom.—Lord Nuffield presented an additional £168,000 to Oxford University.

The Government decided to contribute 60 per cent. towards the cost of a new Waterloo bridge across the Thames.

Spanish Civil War.—The Non-Intervention Sub-Committee agreed on the mandate to be given to the Commissions going to Spain to superintend the withdrawal of volunteers.

Dec. 23: **Aviation.**—Mlle Maryse Hilsz flew from Paris to Saigon, Indo-China, in 3days 20hrs. 21½mins., thus beating the official record.

Palestine.—In a clash between British troops and Arabs, 18 Arabs were killed and two British soldiers died of wounds.

Dec. 24: **Sino-Japanese War.**—Japanese troops occupied Hangchow.

Dec. 25: **United Kingdom.**—The King broadcast a message to the Empire.

Vatican.—The Pope, addressing the Cardinals, made a protest against the persecution of Catholics in Germany.

Dec. 26: **Aviation.**—The Pan-American Airways' *Samoa Clipper* reached Auckland, from Honolulu, inaugurating a United States–New Zealand air service.

Dec. 27: **Aviation.**—The first Imperial Airways flying boat to fly from England to New Zealand reached Auckland.

Dec. 28: **Sino-Japanese War.**—The Japanese authorities in Shanghai announced that subversive acts against the Japanese Army will be punishable. An incident when a Chinese threw hand-grenades at a sampan laden with Japanese soldiers was pointed out as justification for the measure.

Rumania.—M. Tatarescu resigned and M. Goga formed a new cabinet.

Dec. 29: **Japan.**—The Fisheries Convention in force between Russia and Japan was extended for one year.

Irish Free State.—The name of the state was changed to 'Eire', *i.e.* Ireland.

Dec. 30: **Poland.**—A plan for allowing Polish Jews to colonize the island of Madagascar was arranged between the Polish and the French Governments.

Japan signed an agreement with Italy providing for trade between Japan and Italian East Africa.

Egypt.—King Farouk dismissed the Government of Nahas Pasha, and Mohamed Mahmud Pasha formed a new Government.

Sino-Japanese War.—Japan's reply to the British note protesting against the attacks on British ships was published; the Japanese government reiterated that they had taken steps to prevent more outrages.

Dec. 31: **United Kingdom.**—The New Year's Honours list was made public. Lord Nuffield was created a viscount.

France.—The Senate decided not to re-open the Paris Exhibition in 1938.

United Kingdom.—Sir Robert Vansittart was appointed to the newly created post of chief diplomatic adviser to the foreign secretary.

A

ABDULHALIK HAMID, Turkish poet, died at Istanbul on April 13, 1937, aged 86. He was one of the pioneers in the movement for purging Turkish literature of all foreign influences. Among his best-known works are *Tarik Ibn Zeyad* and *Makber*. Hamid was also a distinguished member of the Turkish consular and diplomatic services. He married *en secondes noces* a Belgian lady, and his granddaughters through this marriage are British nationals.

ABERHART, WILLIAM (1878–), premier of the province of Alberta, was born near Seaforth, Ontario, Dec. 30, 1878. He was educated at Seaforth, and Hamilton Normal College, and Queen's University; and was principal of Crescent Heights high school, Calgary, 1915–35. After the Alberta general election of Aug. 22, 1935, Mr. Aberhart found himself head of the largest group returned, the Social Credit Party, and on Sept. 3 was sworn in as premier.

Up to the present time Mr. Aberhart has not succeeded in putting his social credit plan into operation. The main idea of this plan is to set up a new monetary system and to give a dividend of $25 a year to each citizen in the Province. (*See* Social Credit.) Towards this end, on Aug. 4, 1937, a bill was introduced in the Alberta Legislature to license and regulate chartered banks. This bill was passed by the Provincial house on Aug. 6, but was disallowed by the Dominion Government on Aug. 17. A new and similar bill was then introduced, together with a bill ' to ensure publication of accurate news and information '. Both of these bills were reserved for assent by J. C. Bowen, Lieutenant-Governor of the Province. Arising out of this and at Mr. Aberhart's request, the Federal Government announced on Oct. 28 that the whole question of the right of Federal disallowance of provincial legislation would be placed before the Canadian Supreme Court. No decision has as yet been handed down. (J. T. C.)

ABYSSINIA : *see* Ethiopia.

ACADEMIC FREEDOM has of late been much discussed and often assailed. It is important, however, to distinguish between the freedom, inalienable from the prosecution of research and the advancement of learning, to publish, expound, and at times to defend the results of such research, and the freedom, not always wisely expounded or defended, to use an academic position for the propagation of political or social controversies some of which might legitimately be deemed to exceed the bounds of academic propriety and to be an abuse of privilege subversive of the established order. Freedom in the first sense has not been seriously challenged, and the work of the intrepid Russian scientists at the North Pole has evoked world-wide admiration. But freedom in the second sense has been severely criticized and curtailed in Russia, Germany, and Italy where it has been deemed inconsistent with good citizenship to use an academic position to assail the established order. In Germany racial and religious considerations have indeed enforced the retirement of many university dons, and the civil war in Spain has similarly entailed hardships to scholars in various faculties. (A. A. C.)

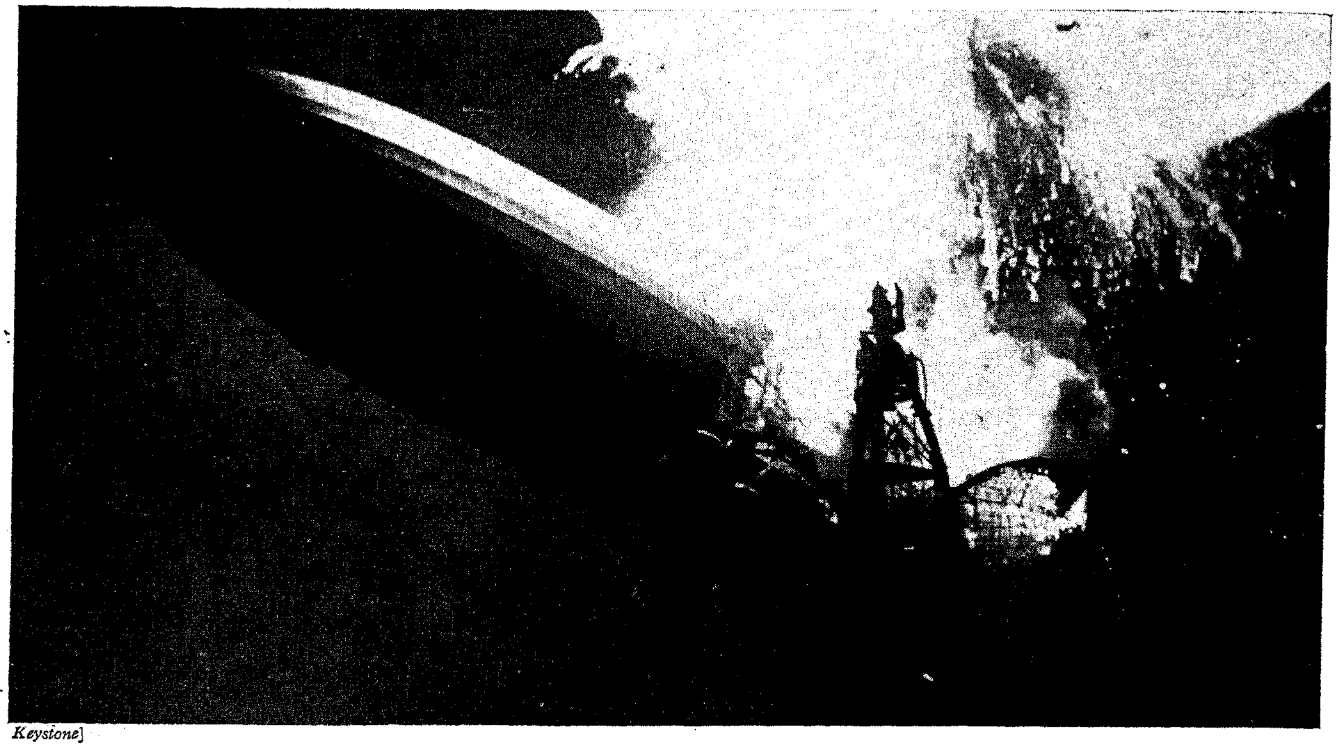
In the United States the major scholarly associations of a general character have established committees to uphold academic freedom and tenure. This list, in 1937, included the American Association of University Professors, the National Education Association, the Progressive Education Association, and the American Federation of Teachers. Cases reported to these associations suggest that the limitations on academic freedom are most often of an indirect character. They are apt to assume such forms as holding a scholar under a year-to-year tenure, making known to him the fact that unconventional ideas will not lead to advancement, and urging withdrawal from expression or participation in controverted issues. The pressure towards conformity has been assisted by government action. Such action has resulted in compulsory teachers' oaths of loyalty to constitutional authority and to prohibitions of radical utterances. Seventy-five such laws limiting freedom of expression were on the books of 44 States in 1935. In two States the mere expression of radical opinion was made a criminal offence. Legal limitations of this character have met with stout resistance in academic circles, though they have undoubtedly hampered free expression by timid or economically insecure teachers.

In 1937, 58 cases of alleged violations of academic freedom were handled by the American Association of University Professors, a slight decrease from the average of the preceding four years. In the most important case, that of Jerome Davis, associate professor of practical philanthropy at the Yale Divinity School, the association found Yale University guilty of 'a violation of the principles of academic tenure which must be maintained if freedom of teaching or research, and of expression of opinion off the campus is to be a reality for members of the faculties of our institutions of higher learning '.

The other three associations were even more emphatic in their censure. They declared that in terminating Prof. Davis's contract in June 1937, after 13 years of service, the governing authorities of Yale had been swayed by opposition to Davis's writings, public utterances, and invitations to liberals to speak from a Yale platform.

ACCIDENT AND MISCELLANEOUS INSURANCE. The principal branches of accident business are motor, public liability, workmen's compensation, personal accident, and burglary, but there are also many smaller sections, including various new ventures such as aviation, credit, and contingency risks.

The year 1937 has seen a sustained expansion in the turnover of business written in the accident department, which has applied in greater or less degree in all countries of the world. The predominant cause of this has been the continued growth of motor insurance, which holds the leading place amongst the various sections of the business. The total premiums written by British offices in motor insurance during 1936 as disclosed in the reports published during 1937 amounted to £35,210,019. This business was derived from all parts of the world, since British insurance interests are on an international basis. The largest national market for motor insurance is in the United States, which country possesses far more motor vehicles than any other country.



Keystone]

THE GERMAN AIRSHIP 'HINDENBURG' DESTROYED BY FIRE AT LAKEHURST, N.J., MAY 6, 1937

The experience of motor insurance as disclosed during the year was not very profitable, though in England an aggregate profit of 3·4 per cent. was secured on the 1936 business. Continental motor insurance has been unprofitable for a number of years, particularly in France and central Europe, though some improvement was recorded last year. The cause of the difficulties is the increase in the number of road accidents and the sharply upward trend of their average cost. Rates of premium have not been advanced sufficiently to keep pace with the increased claim strain. This applies particularly to the third-party liability in connexion with the rise of motor vehicles. An important influence on the course of motor third-party claims may be expected as a result of the decision of the House of Lords in the case of *Rose* v. *Ford,* which in effect gave to the dependants of a person killed in an accident the right to compensation for the deceased's loss of expectation of life. The insurance of motor third-party liability has been made compulsory by law in many countries, though not yet universally. The subject has been under consideration during the year in many countries where compulsory insurance does not yet exist, and it is likely that compulsion will in course of time apply to all the principal countries of the world.

Workmen's compensation insurance, the second largest section of accident business, is practised throughout the world and covers the statutory liability imposed on employers. This differs in different countries, as each has its own statute regulating the scales of compensation to be paid to injured workpeople. The rates of premium in England are regulated by arrangement with the government, so that the claims cost on the aggregate business shall be maintained at 62·5 per cent. of the premiums. The effect is to keep the profit ratio at about 5 per cent. after allowing for commission and expenses. It is the common experience for the State in most countries to retain some control over this class of business even though the actual insurance is transacted through the medium of public insurance companies.

Personal accident insurance, the third principal section of accident business, includes also insurance against disablement through disease or sickness. The experience has been variable, with an increased claims cost in many countries due to the greater street hazard associated with increased traffic. The premiums written by British offices during 1936 amounted to £3,541,214, and the trading showed a profit of 5·5 per cent. Personal accident insurance is treated differently in different countries. The scales of benefits payable are differently constructed, while each country has its own methods of classifying risks and computing premiums. Details of these differences can be obtained only by reference to the prospectuses current in each country. The effect is to cause some variation in the experience. In England the business is profitable, but on the continent of Europe it has been much less favourable.

The remaining sections of accident and miscellaneous business, though numerous, are individually of small volume. They include burglary, fidelity and surety, general third-party, aviation, credit, live stock, plate-glass, hail and windstorm, contingency, and various miscellaneous risks. Some of these are new and comparatively untried, such as aviation and credit business. Aviation insurance is largely done through some form of pooling arrangement because of its element of catastrophe. Credit insurance has given rise to great difficulties in modern times and is now transacted by a comparatively small number of expert offices. Insurances such as hail or windstorm are in demand only in restricted areas where the hazard is likely to be recurrent. The past year has given rise to no particular difficulties in regard to the miscellaneous sections of the business.

(C. E. G.)

ACCIDENTS AND DISASTERS. The major disaster of 1937 was a natural one. Widespread floods in the United States, in the Mississippi, Alleghany, and Ohio valleys caused about 900 deaths, millions of pounds' worth of damage, and hundreds of injuries. Later there were serious floods in the Alleghany, Monogahela, and Ohio valleys, in Ontario, Canada, in parts of Europe, Algeria, Burma, India, and in the Eastern Transvaal and Mozambique (*see* FLOODS AND FLOOD CONTROL).

Several air disasters were recorded for 1937. The most spectacular was the destruction by fire of the German airship *Hindenburg*, when landing at Lakehurst, New Jersey, on May 6th, when 56 out of 97 occupants were killed. An air-liner on the New York–Chicago route crashed in March, with the loss of 13 lives. In August, the wreckage of a Pan-American seaplane was found off Colombia; the 14 passengers were missing. Nineteen people were killed in an aeroplane crash at Chalk Mountain, Wyo., in October. Nine accidents, with 17 deaths, occurred on Empire Air Day in Great Britain. Lightning struck a Dutch aeroplane near Brussels on July 28; the 15 occupants were killed. Seventeen fatalities were recorded in ten days from three 'plane crashes in the Netherlands East Indies. Distinguished people who lost their lives in air accidents included Martin Johnson, explorer; the Duchess of Bedford; Miss Amelia Earhart and Fred Noonan, on a round-the-world flight; five members of the royal family of Hesse; Canon and Mrs. Streeter; and five Russian fliers, including Sigismund Levanevsky, lost in the Arctic in August.

A most distressing disaster in the United States was an explosion of natural gas at a school in New London, Texas, when 413 children and 14 teachers were killed. After a theatre fire at Antung, Manchukuo, 658 bodies were recovered. Sulphuric acid, exploding on the Canton–Hong Kong train, caused 80 deaths. In England 8 men died as the result of explosions at Markham Colliery, 7 at South Normanton, and 30 at Brymbo Colliery, near Stoke-on-Trent.

Road accidents took a heavy toll: in the United States in January, a Florida motor-bus overturned into a canal, drowning 17 occupants; in March a burst tyre caused the death of 18 bus passengers at Salem, Ill.; and at Mason City, Iowa, a train hit a school bus, killing 9 people. Prince Victor of Cooch Behar, uncle of the Maharajah, was killed in a motor accident in October; in November, Prince Bernhard of the Netherlands was injured in a collision.

At sea the most serious disaster was the loss of a Finnish motor ship in Pentland Firth, with 30 lives. Other disasters occurred when the Greek steamer *Loukia* struck a mine off the Spanish coast and four were killed; an Aberdeen trawler was wrecked on the rocks off Iceland, with a loss of 12 lives; and the sinking of the steamer *Alecto* after a collision in the North Sea resulted in 10 deaths. Frank Vosper, the actor, was drowned from the French liner *Paris*.

The worst railway accident of the year was in India, when the Delhi–Calcutta express was derailed and 107 people were killed. In France, 15 were killed at Corquoy, when a tree, fallen across the line, derailed an express, and 30 in the wreck of the Paris–St. Etienne express. In Great Britain, there were 35 deaths in a collision at Castelcary, Scotland, and ten in an electric train collision at Battersea. A pilgrimage train wreck at Neuss, Germany, resulted in 15 deaths. In Brazil, nine people were killed in a train smash.

At Alexandria, Egypt, 22 people died in a crush of crowds to honour King Farouk. The collapse of scaffolding on the Golden Gate Bridge caused 10 deaths at San Francisco.

ADDIS ABABA: *see* ETHIOPIA.

ADEN. On April 1, 1937, the administrative control of the Aden Settlement was transferred, in virtue of the Government of India Act 1935, from the Government of India to that of the Colonial Office. From that date Aden assumed the status of a Crown Colony, and the Government of India ceased to pay the fixed contribution on account of the military and political charges which it had done in the past. The transfer of control does not mean any breach in continuity in machinery and methods of government. The spirit, and in many cases the letter, of existing laws and regulations will be retained. The right of appeal in judicial cases to the High Court of Bombay, the use of Indian currency, and the maintenance of the port as a free port will continue.

The population of Aden was: Aden proper 34,471, and Little Aden 12,167, or a total of 46,638. The population of the protectorate (about 42,000sq.m. of territories of Arab Chiefs in treaty relations with Great Britain, lying E., N., and W. of the Settlement) is estimated at about 600,000. The number of vessels, exclusive of country craft, which entered the port of Aden during 1936—37 was 2,088, and the number of sailing vessels and dhows, 1,145. The total value of imports was Rs.7,08,86,985, of which Rs.21,69,085 were land-borne. Total exports were Rs.4,30,70,424, of which Rs.16,13,066 were land-borne.

Perim continues to be administered by the commissioner of police at Aden, who visits the island once a month by air. The harbour and post office have been closed since Nov. 1936. Socotra, which is also under the Government of Aden, has continued the even tenor of its life.

ADLER, ALFRED, Austrian psychologist; born in Vienna in 1870; died at Aberdeen, May 28, 1937, whilst on a lecture tour of British medical centres. He studied medicine, and practised, first as an eye specialist, and later as a psychiatrist, in which capacity he taught at the Long Island University College of Medicine, the Vanderbilt Clinic, the Columbia-Presbyterian Medical Centre, and the New School for Social Research in New York City, as well as in the schools of Vienna. After having studied psychoanalysis with Sigmund Freud, he broke away in 1911 to found his own school of individual psychology. He considered that Freud over-emphasized the influence of sex and under-estimated the inferiority complex and drive for power in the individual. Among his published works were *The Practice of Individual Psychology, The Science of Living,* and *Pattern of Life.*

ADULT EDUCATION. The year 1937 was distinguished by the development and extension of adult educational activities in many parts of the world, particularly in Great Britain, the British Dominions, the United States, Scandinavia, and some other European countries. The greatest personal loss during the year was the death of Dr. T. G. Masaryk, the first president of the World Association for Adult Education, who was himself largely a product of the adult education of his time.

It is not possible, in a brief space, even to mention the diversified forms which the work has taken. There has been widespread effort, particularly in India and Iran, to abolish adult illiteracy. A survey of university extramural and extension work throughout the world has been conducted by the World Association for Adult Education, and its report is in preparation. International relationships have also been advanced by the organization of an Anglo-Scandinavian Summer School in Denmark and a French-Scandinavian residential course in France.

Adult education has for some years assumed increasing importance in the United States, where there is a multiplicity of effort. Responsible people are looking to adult education as a means whereby many of their social problems may ultimately be solved in a democratic manner. The Federal Government maintained the activities of the Civilian Conservation Corps, started some years ago as a means of unemployment relief, through which men organized in local camps have undertaken forestry work simultaneously with the development of their own physical, vocational, and cultural education. Much reliance has been placed upon the development of public forums, a method of education by discussion which, traditional in the United States, has recently been brought to a high pitch at Des Moines by Dr. Studebaker, who is now in charge of the whole organization. The American Association for Adult Education has adopted a five years' programme of studies in the 'social significance' of adult education in its various forms throughout the United States. Already five reports have been published.

In Canada, largely owing to the development of the Workers' Educational Association and the recent establishment of the Canadian Association for Adult Education, considerable impetus has been given to the movement throughout the Dominion, both in urban and rural areas. Remarkable work is being done both in St. John's and in the Outports of Newfoundland by the work of itinerant teachers and travelling libraries. The Workers' Educational Association in New Zealand secured a renewal of the Government grant in 1936, and was entrusted with the work of developing an educational scheme for public works camps.

The University Tutorial Class movement, participated in by every university and university college in England and Wales, increased its influence, and 859 classes and 14,230 students were at work in 1937. This type of class also flourished in the British Dominions, particularly in Australia, New Zealand, and Canada, and to a smaller extent in Northern Ireland and South Africa. The subjects studied comprise every known subject of a liberal education, which does not demand a formal school preparation. These classes must aim at attaining, within the limitations of the subjects studied, the standard of a university course in honours. In connexion with the classes, thirteen summer schools, attended by 1,411 students, were held, and a limited number entered for residential courses at either the universities, university colleges, or Ruskin College.

Special attention has been given by the Workers' Educational Association, which is almost entirely responsible for the development of the University Tutorial Class movement, to the problems connected with the education of younger adults of 18 years or over.

An important accession to the group of residential colleges for workers was made by the Marquess of Lothian's gift of Newbattle Abbey, Midlothian, for work on the lines of Coleg Harlech, a successful Welsh college for working men. Under the wardenship of Mr. A. G. Fraser, well known for his work in Ceylon and West Africa, the college opened its doors in Jan. 1937 and closed the year with 39 students, who were mainly supported by bursaries provided by Scottish local authorities.

Evening institutes and colleges, mainly under the control of local education authorities, provided instruction in subjects ranging from poultry keeping, through arts and craftsmanship, to the study of languages and the social sciences. The number of students enrolled in the year 1935–36 was 956,224. The actual figures are not available for 1937, but they doubtless exceed one million.

Special attention has been given to the provision of books for workers at sea, particularly in Great Britain, the United States, and in Norway. The Seafarers' Education Service, which works on the ships of the British Mercantile Marine, in order to supplement its provision of books, is creating a College of the Sea, designed to bring as many of the facilities of adult education to workers on ships as is possible, having regard to the conditions of their life. The Duke of Kent recently referred to the service as 'A university of the sea', rewarded by many fine graduates.

The British Institute of Adult Education increased the number of its Art for the People exhibitions, which had proved a marked success. It also reported on the educational use of the gramophone.

The B.B.C. listening groups continued successful work in many parts of Great Britain, whilst educational broadcasting has received much attention in the United States and in the various Dominions.

The above brief details clearly justify the statement that in 1937, the education of the adult advanced in power and influence throughout the world.

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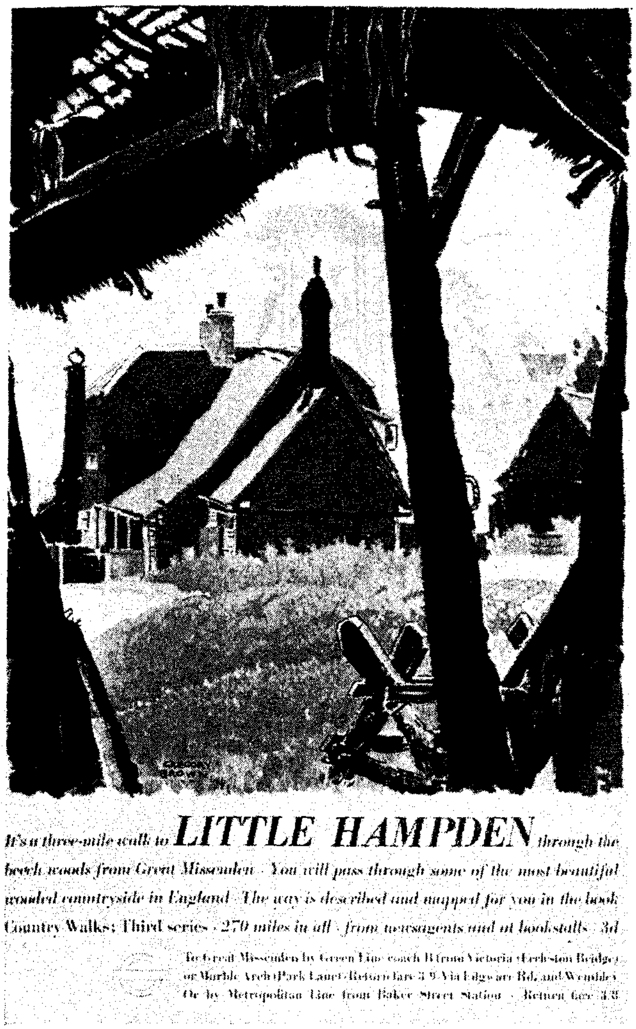
(A. MAN.)

ADVERTISING. The principal developments during 1937 were increased advertising volume, changing trends in copy and layout, rapid gains in the circulation of new magazines, closer control of advertising practices through legislation and voluntary regulation, and keener appreciation of the consumer's point of view.

During 1937 in the United Kingdom, advertising volume in national daily newspapers increased about 1 per cent., and in provincial daily newspapers decreased less than 1 per cent., compared with an increase of about 10 per cent. for magazines. In the United States it increased 5·7 per cent. over 1936. Radio gained 18 per cent., outdoor advertising 15 per cent., magazine advertising 12 per cent., farm paper advertising 5·6 per cent., and advertising in newspapers 2·8 per cent.

Copy and Layout.—Advertising writing, in 1937, became more frank, terse, and dramatic. Directness of expression, introduced in some countries for radio broadcasting, was transferred to the printed page. Humour became more prevalent, and advertisements resembling newspaper comic strips were used more extensively. About 300 newspapers in the United States arranged to publish such advertisements on their comic pages. Although generally humorous, this type of advertising may be serious in tone. Institutional advertising, designed to develop goodwill towards the advertiser's business, increased during 1937. In the United Kingdom, the Post Office and other government agencies used institutional advertising. While in the United States, large manufacturers, banks, insurance companies and public utilities emphasized this type of appeal. It is estimated that 35 States appropriated a total of $5,500,000 to advertise facilities for tourists and industries during 1937, twelve for the first time. Advertising headlines became shorter and more rhythmic. There was a tendency to eliminate borders and purely decorative designs. Bleed-type illustrations, extending to the edge of the page, became more prevalent. Rotogravure and other varieties of colour advertising were used more extensively and more photographs were reproduced.

Advertising Mediums.—In the United Kingdom, the circulation of national morning newspapers, published in London but widely distributed outside the metropolitan area, continued to increase during 1937, while provincial newspapers generally retained their readers. There was a trend towards the development of two distinct types of newspapers: one publishing popular information about


It's a three-mile walk to LITTLE HAMPDEN through the beech woods from Great Missenden · You will pass through some of the most beautiful wooded countryside in England · The way is described and mapped for you in the book Country Walks: Third series · 270 miles in all · from newsagents and at bookstalls · 3d

POSTER ISSUED BY LONDON PASSENGER TRANSPORT BOARD

current happenings, the other featuring articles of the magazine type. In the United States, two new periodicals featuring photographic illustrations of current events acquired a combined circulation of more than 3 million readers. This type of publication also became more popular in the United Kingdom. The use of films as an advertising medium continued to increase, both cartoon and sketches being employed; while in the United States the two-reel talking film, frequently in colour, and a shorter film requiring about one minute for a showing, were used extensively. About 8,000 theatres contracted with film distributors to exhibit this latter type of film.

Improvements in the technical processes involved in preparing advertisements were reflected in the superior quality of the finished product. Although radio stations in the United Kingdom do not broadcast advertising programmes, three important stations on the continent transmit programmes in English for the benefit of British advertisers. A new radiŏ station, which is available for this type of broadcast, was established at Toulouse, France, during 1937.

Outdoor Advertising.—Hoardings or poster boards in the United Kingdom became more attractive in appearance during the past year. National organizations were formed to control advertising space on networks of hoardings situated in various localities. In the United States, new methods were developed to determine the number of persons who observe window displays and outdoor advertising.

Legislation.—In the United Kingdom, the Select Committee on Medicine Stamp Duties, during 1937, proposed a stamp tax on medicines, drugs, and, possibly, cosmetics, amounting to about one-sixth of the retail price. If enacted, it is feared that this tax may reduce advertising appropriations. In the United States, the Miller-Tydings Act, passed in 1937, provided that the Federal Anti-Trust Laws shall not invalidate contracts between manufacturers and distributors fixing retail prices in States where such contracts are permitted by State Fair-Trade Laws. Forty-two of the 48 States have passed Fair-Trade Acts, permitting but not requiring manufacturers to fix minimum retail prices. By encouraging competition between national and private brands of merchandise, this legislation has undoubtedly increased advertising for both types of products.

Ethics.—The International Chamber of Commerce, in 1937, approved a code providing that advertising shall conform to laws and to religious, patriotic, moral, and aesthetic sentiments of the country where it is published; that advertisements shall contain no misleading statements about materials, ingredients, origin, price, value, suitability, or terms of purchase. Although this code has no force in law, it is generally recognized by large advertisers. In the United Kingdom, the code of advertising ethics recently adopted by the Institute of Incorporated Practitioners in Advertising is observed by many advertisers and advertising agencies. In the United States, the Federal Trade Commissions continued to examine newspaper and magazine advertisements. One of the commission's duties is to see that dishonest advertising is either corrected or discontinued. The American Association of Advertising Agencies, in 1937, proposed a code governing the advertising of proprietary medicines. This code provides that relief of symptoms shall be emphasized rather than complete cures; that diseases too serious for self-medication shall not be mentioned in advertising; and that advertisers shall assume full responsibility for proving their claims.

Consumers.—In the United Kingdom, as well as in the United States, there was a growing interest in scientific tests to determine the relative merits of competing products. To make advertising more useful to consumers and more effective for advertisers, the institute of Incorporated Practitioners in Advertising in the United Kingdom, and various organizations in the United States, eliminated much of the guesswork from advertising by means of scientific research. Reliable methods have been developed to estimate the size of radio audiences. Consumer preferences for both advertising and merchandise have been extensively analysed during 1937 by such means as coupons, questionnaires, and personal interviews. In the United States, the National Retail Dry Goods Association sponsored, during 1937, the Consumer-Retailer Relations Council. The objective of this group, which is composed of representatives of national women's organizations, large retailers, manufacturers, and Federal Government bureaux, is to encourage accurate, informative labels, uniform terminology meaning the same to dealer and consumer, truthful local and national advertising. One of the leading magazine publishers organized a consumers' division for the purpose of providing consumers with accurate information about advertising and advertised products. The National Association of Manufacturers, during 1937, prepared a series of advertisements designed to interpret business to consumers.

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K. M. Goode; *Modern Publicity*, 1937–38, The Studio Publications, Inc. (D. St.)

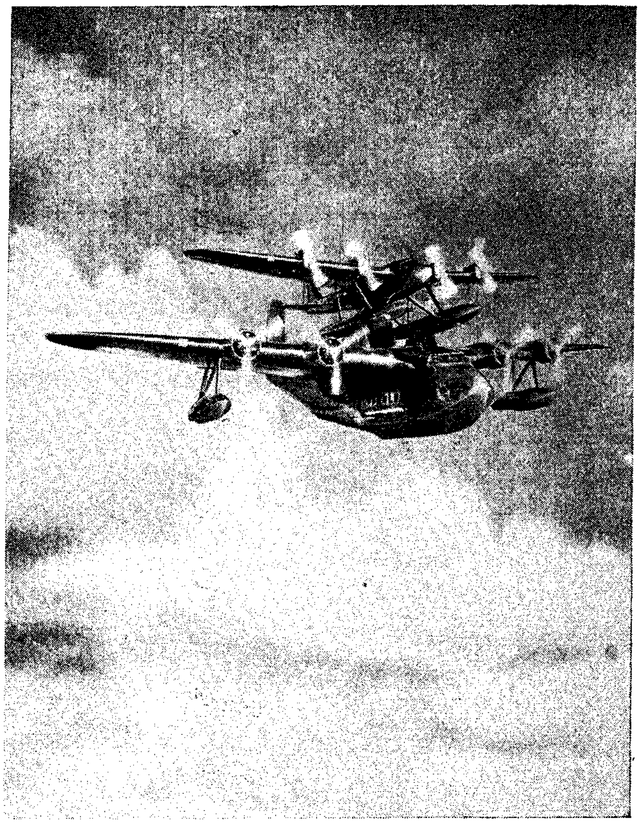
AERONAUTICS. Several countries were preoccupied during 1937 with military aviation. In Great Britain, new factories began to deliver craft under the rearmament scheme, and leading features are now available of several well-known war-planes, *e.g.* the *Battle, Blenheim, Harrow, Wellesley* (' geodetically ' constructed), and *Whitley.*

In civil aeronautics, the year established the Short Empire flying-boat as an exceptionally good commercial aircraft whose originality of design should stimulate development. Five double journeys across the Atlantic were made by two of these 18-ton 200-m.p.h. craft, fitted with special fuel tanks, between July and September. A fleet of 28 was put into construction.

Interest in trans-oceanic and other long-range flying is reflected in several other aircraft constructed during the year, *e.g.* the Boeing 72-passenger flying-boat, the 2,100-h.p. De Havilland Albatross aeroplane (to be flown experimentally across the Atlantic and otherwise used as a 22-passenger air-liner), and the 5,000-h.p. 27-ton Douglas. Of outstanding novelty is the Mayo composite aircraft. In the Short-Mayo prototype, the long-range craft is a 9-ton seaplane with small wings. Its low power (1,300h.p.) and heavy wing-loading (33lb. per sq.ft.) promise a cruising speed of 160-170m.p.h., but render independent take-off impossible. It is carried into the air, with all engines working, on the back of a lower component closely resembling an Empire flying-boat. But the shapes and incidences of the wings are so chosen that, on attaining a suitable flying speed, the seaplane supports its own weight and part of that of the flying-boat as well. Thus a mutually repulsive force is automatically generated to ensure rapid separation of the two components when an anchor mechanism between them is released at a suitable altitude.

Despite consequent high landing speeds, wings are still being diminished in area for given load in order to reduce skin friction and economize in structural weight, the latter being especially important, according to a recent American analysis, in connexion with long range. ' Split ' flaps, whose value in decreasing high landing speeds was first demonstrated in the London-Melbourne race of 1934 (though they were invented 12 years previously), have been improved upon in many ways since. During 1937, preliminary experiments under the Government of India suggested that slots cut through the wings should delay the sharp stall of split flaps, and permit their safe extension along the span, sliding shutters replacing ailerons for purposes of lateral control. An addition to the series of Fairey flaps—one of retractable, trailing-edge aerofoil type—has promised particularly high lift, with economy in operational effort. Tricycle undercarriages, familiar in pre-war days, have been re-introduced in modernized form for greater safety in high-speed landings, especially on runways slightly inclined to the wind.

New British and American engines have met a need for more powerful units, *e.g.* the ethylene glycol-cooled Rolls-Royce Merlin (990h.p.), the Bristol air-cooled sleeve-valve radial Hercules (1,150h.p.) and a double-row Wright Cyclone (1,500h.p.). At the Royal Aircraft Establishment, 2-speed superchargers have been tested to permit high altitude flying without excessive boosting at ground level. Projected fuels of even higher octane value than is now standard, together with corresponding engine modifications, promise reduction in the weight of large air-cooled petrol engines below the 1lb. per h.p. already nearly realized. This further postpones a wide adoption, for greater safety against fire, of the heavy-oil Diesel-type engines in which Germany leads. Ducted cooling has been developed sufficiently to recover, in favourable cases, more than one-half of the radiator losses, but the advantage is less with radial engines.

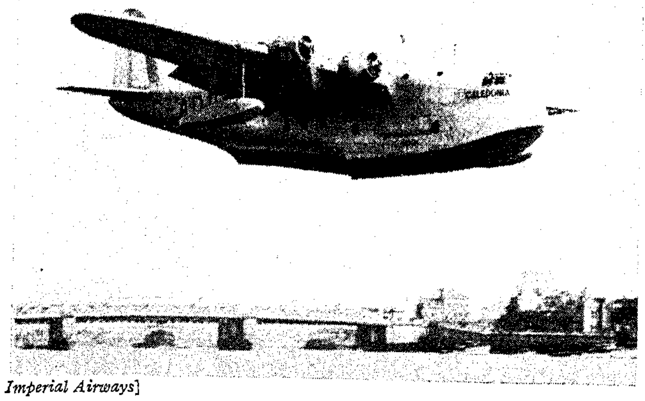


Imperial Airways]

THE SHORT-MAYO COMPOSITE AIRCRAFT IN FLIGHT

Three systems for de-icing—viz. (*a*) breaking away ice deposit, (*b*) squeezing a film of glycol from a reservoir over the exposed surface, and (*c*) painting with anti-freezing paste—have been under test by the Royal Aircraft Establishment on aeroplanes detailed to seek out deliberately bad weather conditions. Whilst (*c*) should suffice for casual protection, both (*a*) and (*b*) may find use under severe conditions, remembering that the danger affects not only wings, for which (*a*) is specially suitable, but also many other parts, *e.g.* the wind-screen.

Modern aeroplanes are about twice as efficient as those of seven years ago, and substantial improvement is yet in store. Realization of this will demand an extension of aerodynamical knowledge, to which some interesting experiments at the National Physical Laboratory have been directed. Measurements made in the compressed air tunnel should indicate more reliably the resistance of large wings under flying conditions, and eventually lead to a more accurate knowledge of skin friction with turbulent flow. Experiments on isotropic turbulence behind grids promise a better understanding of this difficult and important subject. Another investigation relates to the shock waves formed by high-speed aircraft, reminiscent of the ' bore ' which precedes a bullet. American photographs demonstrated such waves cast from an aerofoil at three-quarters of the speed of sound, whilst propeller-root interference may induce them to occur on aircraft at much lower speeds, say, 400m.p.h. The phenomenon is associated with sharp changes in pressure; it increases drag and tends to stall wings. The



Imperial Airways]

THE FLYING BOAT CALEDONIA FLYING OVER ROCHESTER

investigation aims at shaping aircraft parts to delay these effects, as has already proved possible under the extreme conditions existing near the tips of high-speed propellers.

At the turn of the year, Queen Mary College devised a new family of mathematical wing shapes which closely resemble the best forms indicated by experiment. These may prove useful whenever calculations of flow are required, *e.g.* in connexion with the foregoing.

The tragic loss of the *Hindenburg* airship, after 37 Atlantic crossings, when landing at Lakehurst in May, is being made good in Germany, helium replacing hydrogen.

On June 30 Flight-Lieut. M. J. Adam flew a Bristol monoplane with a special 'Pegasus' engine to an altitude of 16,440metres (nearly 10¼m.), securing a world record for Great Britain. Regular flying at substratospheric altitudes has been organized in America, sealed cabins tapping oxygen stored in the wings. The international record for the longest flight in a straight line (10,148km., or more than 6,305m.) was gained for Russia by Colonel M. Gromov, Comdt. A. Youmachev, and Ing. S. Danilin, flying an A.N.T.25 monoplane from Moscow to San Jacinto, U.S.A., July 13–15. In November, Flying-Officer A. E. Clouston, with Mrs. Kirby-Green, flew to the Cape in the D.H. Comet of London-Melbourne trophy fame in the record time of 45hrs. 6mins., returning in 57hrs. 23mins. Miss Jean Batten won the International Aeronautical Federation's gold medal for the greatest flying achievement of 1937. (*See* also AVIATION, CIVIL; AIRPORTS; AIR RACES, etc.)

(N. A. V. P.)

AFGHANISTAN. A Moslem kingdom lying between India and Iran, with an area of about 245,000sq.m. and a population of about 11 millions. The ruler is H.M. Muhammad Zahir Khan since 1933. The country has been admitted a member of the League of Nations, and has now a constitution, with a council of ministers, a senate (40 nominated members), and an assembly (120 elected members). After the latest Afghan-British War of 1919, a treaty was signed, by which Great Britain recognizes the complete independence of Afghanistan and exchanges legations.

The capital is Kabul (pop. 80,000), Kandahar (60,000) and Herat (30,000) being the only other towns of importance. The official language is Persian, which is generally understood by the educated classes, although Pushtu is spoken in the south and east. No reliable statistics of the ordinary type are available, in respect of education, finance, agriculture, commerce, or the like. There are no railroads in the country, but motor traffic is extending, and various factory industries are being opened up. The trade with India through the frontier passes is considerable, exports being fruit, carpets, wool, and skins; imports, cotton and piecegoods, metals, sugar, and tea. There is no record of the corresponding trade with Russia and Iran. The year 1937 was one of unusual quiet in this turbulent land. (ME.)

AGRA AND OUDH: *see* UNITED PROVINCES OF AGRA AND OUDH.

AGRICULTURE. Even if not highly prosperous, 1937 was a better year for British agriculture than any since the depression began. Farmers shared in the general economic revival and also benefited from special measures of State assistance. Nevertheless, the volume of output was slightly less than in 1936 and 1935. The acreage under wheat increased again slightly after rising steadily from 1931 to 1935 in response to the subsidy. The barley acreage also increased a little, while the area given to oats declined heavily:

GREAT BRITAIN

	Wheat		Barley		Oats	
	Acreage	Yield per acre	Acreage	Yield per acre	Acreage	Yield per acre
	000 acres	bushels	000 acres	bushels	000 acres	bushels
1927–29	1,512	33·0	1,228	35·3	2,678	44·0
1934–36	1,843	33·2	905	34·6	2,230	44·0
1936 .	1,798	30·1	891	34·2	2,248	43·2
1937 .	1,831	29·6	905	29·2	2,038	43·2

Yields per acre over the country as a whole were below average but were better on light land, which suffered less from the heavy rains. It is important to realize that corn crops taken together now constitute less than 5 per cent. of the value of the total agricultural output.

The acreage under most root crops continued to decline, largely because of the shortage of labour, but partly because of the wet spring. Sugar-beet fell from 355,000 acres in 1936 to 314,000 acres; turnips and swedes from 794,000 acres to 762,000 acres. Except in the case of potatoes, yields were generally below average. At the same time the area under grass, both temporary and permanent, increased. Hay crops in 1937 were good. Grass is now by far the most important crop in Britain, the annual value of fresh grass and hay together amounting to well over £50 millions.

British farming revolves more and more round livestock and their products, which make up 70 per cent. of the value of the total agricultural output. In 1937, the numbers of beef cattle increased, while dairy cattle slightly declined. The output of beef and veal has increased steadily since 1931, and in 1935–36 at 12·8 million cwt. was higher than ever before. Output fell slightly in 1936–37.

GREAT BRITAIN

Year	Cattle	Sheep	Pigs	Poultry
	Thousands	Thousands	Thousands	Thousands
1927–29	7,306	24,082	2,854	50,301
1934–36	7,895	24,210	3,880	71,301
1937 .	7,908	24,686	3,874	63,734

Milk output reached its maximum in 1936. Of the 1,589 million gals. of milk produced in 1935–36, approximately two-thirds was consumed as liquid milk, the remainder being manufactured into milk products—principally cheese and butter. During 1937, owing partly to the rise in feeding-stuffs prices, rather less milk was produced, and the quanti-

Sport & General]

TRIPODS FOR DRIER HARVESTING. BRINGING IN THE LOADED TRIPOD FULL OF WHEAT

ties going to manufacture had to be curtailed considerably by the Board in order to maintain supplies in the liquid market.

The sheep population reached a post-war maximum in 1932, then fell by over 2 millions, and is now on the up-grade again. There has been an increasing tendency in recent years for the animals to be slaughtered earlier—as lamb rather than as mutton. There has also been a shift from arable feeding to grass feeding of sheep, in order to economize labour. The pig population increased rapidly as a result of restriction of bacon imports, but still exhibits the phenomenon of a four-year cycle. In England and Wales the year 1937 formed part of the downward phase. In the previous year (1935–36) the output of pigmeat reached the highest figures yet recorded—8·2 million cwt. About one-third of this is bacon. Poultry numbers by contrast have not been maintained. Between 1924 and 1934 the British poultry population, on holdings of one acre or more, roughly doubled, owing to the increase in domestic demand for eggs and to the progressive fall in the prices of poultry foods. Since 1934, grain prices have risen and some of the less fortunate or less efficient producers have been forced out of business.

Market gardening also has expanded enormously since the War, the acreage under the principal vegetables increasing by over 70 per cent. A special feature has been the development of vegetable production on mixed farms in the eastern counties, where it has been found to combine well with other farm enterprises. Fruit growing has also tended to change hands. For instance, the old apple orchards of Hereford and Devon have declined, while new orchards, cultivated on scientific lines, have been planted in East Anglia. For most fruits 1937 was a good year.

Prices.—The general level of agricultural prices in Britain has been upward since 1933, and during 1937 almost all crops except potatoes shared in the upward movement :

Year	Wheat *Per cwt.*	Barley *Per cwt.*	Oats *Per cwt.*	Potatoes 1st-quality Majestics *Per ton*
	s. d.	*s. d.*	*s. d.*	*s. d.*
Dec. 1936 .	8 8	9 6	7 1	149 0
Dec. 1937 .	8 9	10 6	8 8	71 0

For wheat, of course, farmers have, thanks to the subsidy, obtained a higher price than the above (*see* WHEAT). Furthermore, the contract price for sugar-beet was advanced for the 1937–38 season from 36*s.* to 43*s.* per ton.

In cattle markets demand was strong both for stores and for fat stock. Prices of pigs also advanced materially :

Year	Fat Cattle 1st-quality Shorthorns *Per cwt.* (*liveweight*)	Fat Sheep 1st-quality Downs *Per lb.* (*deadweight*)	Fat Pigs 1st-quality Porkers *Per 20lb.* (*deadweight*)
	s. d.	*d.*	*s. d.*
Dec. 1936 .	36 8	11¾	15 4
Dec. 1937 .	45 4	12	16 4

The improvement in cattle prices is due partly to the subsidy (*see* below). As a result, a number of West Country producers, who entered the milk market when cattle prices were bad, have reverted to store raising. Pool prices to milk producers also increased during 1937, firstly because the proportion of milk going to the higher-priced liquid market increased, and secondly because the Milk Board obtained higher prices both on its manufacturing and its liquid contracts. Farmers did not enjoy the full benefit of these changes, because at the same time the cost of things which farmers buy was going up, particularly the cost of labour, feeding-stuffs, and fertilizers. During 1937, the minimum weekly wage for adult male workers was increased in most counties by 1*s.* to 3*s.* Some farmers also were obliged to pay more than the legal minimum wage in order to retain their workers, for in most districts there was a shortage of farm labour, largely due to aerodrome construction and other forms of rearmament. Almost all feeding-stuffs rose in price in 1937 : milling offals by some 28 per cent., maize and barley meal by 11 per cent., and oilcakes by from 10 to 16 per cent. Similarly, fertilizer prices advanced : nitrates by 5 per cent., potash by 5 per cent., and phosphates by 7 per cent., though these increases were offset by the new subsidy given for lime and basic slag.

Imports.—Britain depends for two-thirds of her food supply on imports from abroad. Food imports in 1937 totalled £432 millions as against £382 millions in 1936, but this was mainly due to the general rise in world prices. Actually in the case of most commodities there was little change between 1936 and 1937 in the quantities imported. Indeed, several of the principal foodstuffs imported are subject to compulsory or voluntary restriction agreements. During 1937, a duty of ¾*d.* per pound was placed upon imports of chilled beef, principally affecting the Argentine. On the whole, between 1931 and the end of 1936 (later figures not available), total food imports declined in volume by 10 per cent. ; supplies from Empire sources increasing by 30 per cent., whilst foreign supplies have been reduced by 35 per cent.

State Action.—The government has been engaged in converting temporary legislation into long-term policy for agriculture. In 1936, the sugar-beet industry was reorganized and given a permanent subsidy. The factories were amalgamated into the British Sugar Corporation, which contracts with the growers for beets, and a Sugar Commission was set up to administer the subsidy and supervise the contract price. The contract price is fixed with a view to maintaining a maximum acreage of 375,000 acres ; the higher the price has to be to achieve this, the greater the subsidy. In 1936–37 the subsidy amounted to £2·6 millions and the revenue abatement (because the excise on sugar is less than the import duty) to a further £2·6 millions.

In the case of wheat, the quantity which can qualify for subsidy was increased in 1937 from 6 million to 8 million quarters. The assistance to cereals was augmented during the year by an oats and barley subsidy. Payments will be made on both oats and barley when the price of oats falls below 8*s.* per cwt., and will depend on the acreage grown (not the quantity produced). Both subsidies are really price-insurance schemes. In the year of lowest wheat prices, 1933–34, payments to wheat growers totalled £7·2 millions. The oats and barley scheme is not expected to cost more than £1·75 millions in any one year.

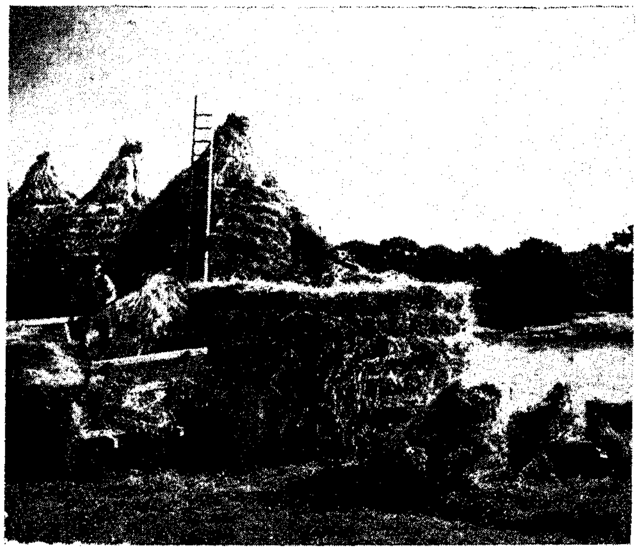
During 1937, the cattle subsidy, begun in 1934, was put on a permanent basis. Payments are made on the following schedule :

	Home-bred Animals *Per cwt. liveweight*	Imported Animals *Per cwt. liveweight*
	s. d.	*s. d.*
Ordinary subsidy .	5 0	2 6
Quality subsidy .	7 6	5 0

The scheme is administered by a Livestock Commission, and is intended to cost not more than £5 millions per year. So far, just over half the animals slaughtered have obtained the quality subsidy ; but the proportion of imported animals in the quality grade is higher than the proportion of home-bred cattle ; also in Scotland 70 per cent. of the cattle attain the quality grade. Experiments in centralized slaughtering are also to be made. Another innovation in 1937 was the subsidy for lime and basic slag, by which the State meets 50 per cent. of the cost of these fertilizers. At the same time a campaign was initiated to reduce the incidence of disease among livestock. The veterinary services have been centralized, new research work has been begun on animal diseases, and additional premiums are being given for milk from attested and tuberculin-tested herds.

Advance also is being made in the housing conditions of farm labourers. Already, under the Housing Act of 1930, 22,000 new houses have been built, and under the Rural Workers Housing Act of 1926, 13,000 houses have been reconditioned. Progress is being made also under the 1935 Overcrowding Act. It has been announced that in 1938 a new Bill will be introduced to expedite the rebuilding of rural cottages.

Another important step taken in 1937 was the establishment of a Food Defence Plans Department to organize food supplies against the eventuality of war. It has been building up a shadow organization which could be called into existence at a moment's notice to control the supplies and prices of all important foodstuffs. It has investigated the two policies of large-scale food storage and of expanding domestic food output. To maintain a store of a year's supply of cereals and sugar and several months' supply of meat and dairy produce would not be excessively costly. To ensure the maximum domestic output of food in time of war, output may be stimulated to an artificially high level in peace time, or reserves of soil fertility may be built up to be cashed in time of emergency. In this connexion it is increasingly realized that land laid down to temporary grass will, when ploughed up for corn, yield better crops than it would in the ordinary rotation. Moreover, the importance of grass has been emphasized by Prof. Stapledon's researches into strains of grasses. The new development of grass drying is a further aspect of this tendency. It may be that arable farming will in many districts give way to alternate husbandry, as the new method is called, whereby corn or root crops are grown in a field only once every four or five years. The Oxford Farming Conference in Jan. 1938 was devoted to this subject.


Sport & General]

HARVESTING IN SCOTLAND. STACKING BESIDE THE RIVER TAY, NEAR PERTH

Perhaps the most fundamental principle of agricultural policy is the adequate nutrition of the people. In the case of Britain this means directing agriculture more and more to the production of the 'protective foods'—*e.g.* milk, eggs, fruit, and vegetables—at prices which even the lowest income groups can afford to pay. This means greater efficiency, which, indeed, is being rapidly achieved. All over the country, machines, not only tractors, but combines, hay-sweeps, roto-tillers, spraying plants, milking machines, and so on, are performing the work formerly done by horses and men. Between 1931 and 1935 the volume of the agricultural output increased by 20 per cent., while the number of workers fell from 829,173 to 786,666. Or, to take another example of progress, the average yield per acre of currants and raspberries is at least 33 per cent. higher than 10 years ago, largely owing to the selection of healthy planting material and to systematic spraying. But much remains to be done. Probably at the moment what is most needed is an energetic attack on animal diseases and more educational work among farmers, to help British agriculture to supply the protective foods in sufficient quantities and at reasonable prices.[1]

Australia.—The chief branches of agriculture are still wool, wheat, and meat, but dairying and fruit growing have expanded enormously in the last 10 years. During 1937, the price rise continued in all agricultural products except wool, which fell from 20*d.* to 14*d.* per lb. and then rose again a little. Anxiety is felt at the development in Germany and elsewhere of rival textile fibres. The wheat acreage expanded from 12·3 to 13·7 million acres ; yields were better than in 1936, though still below normal, and exports increased considerably. In the meat industry the event of greatest significance has been the improvement in chilling technique, which makes commercially possible the export of chilled meat from Australia to the United Kingdom. As yet, cattle are not of sufficiently high quality for Australian beef to rival the Argentine product. Meanwhile, a satisfactory quota for frozen meat was obtained at the Imperial Conference.

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[1] Part of statistical information for this and subsequent sections supplied by the agricultural service of the International Labour Organisation.

Several agricultural products had, during the crisis years, been covered by Federal marketing schemes. In 1936 these were declared unconstitutional. A referendum, held in 1937, to amend the Constitution in this matter, was heavily defeated, and at present inter-State marketing arrangements are carried on voluntarily. During 1937, an increase in agricultural wages of 4*s.* to 6*s.* per week was made by the Commonwealth Arbitration Court. Topics actively discussed included soil erosion, which is becoming a problem in South Australia, and closer settlement, for which the Federal Government has arranged a rural bank loan, advancing up to 80 per cent. of the purchase price of holdings.

New Zealand.—The outstanding feature has been the legislation of the Labour Government, mostly already introduced during 1936, in particular the Primary Products Marketing Act and the new code for agricultural labourers. Under the P.P.M.A. the government buys at the ports all dairy products destined for export, and itself markets them abroad. The farmer working under 'normal' conditions is to get a stable price and an income to maintain him in 'a reasonable standard of comfort'. In 1937, the guaranteed price for butter was raised from 117*s.* 3*d.* to 123*s.* 8*d.* per cwt., and that for cheese from 63*s.* 7*d.* to 70*s.* 4*d.* per cwt. Butter exports rose by about 10 per cent. The final account for the year 1936–37 will probably show a loss to the government of just under £500,000. A new Bill proposes to extend government control to the prices of dairy products consumed in the domestic market. As yet national marketing has not been applied to any other products.

Sheep numbers reached a new record in 1937, though the wool clip, at 315·4 million lb., was slightly below the record clip of the previous year. (Incidentally, in another Dominion—South Africa—wool production has also been expanding rapidly; output rose 28 per cent. between 1935 and 1937.) For meat exports New Zealand obtained at the Imperial Conference an increase in her quotas: she may send to the United Kingdom 4 million cwt. of lamb and 56,200 tons of beef. As regards wheat, the Dominion is endeavouring to become self-sufficient, and a subsidy of £150,000 has been granted to bridge the gap between the fixed price of bread and the guaranteed price of wheat—5*s.* 3*d.* per bushel.

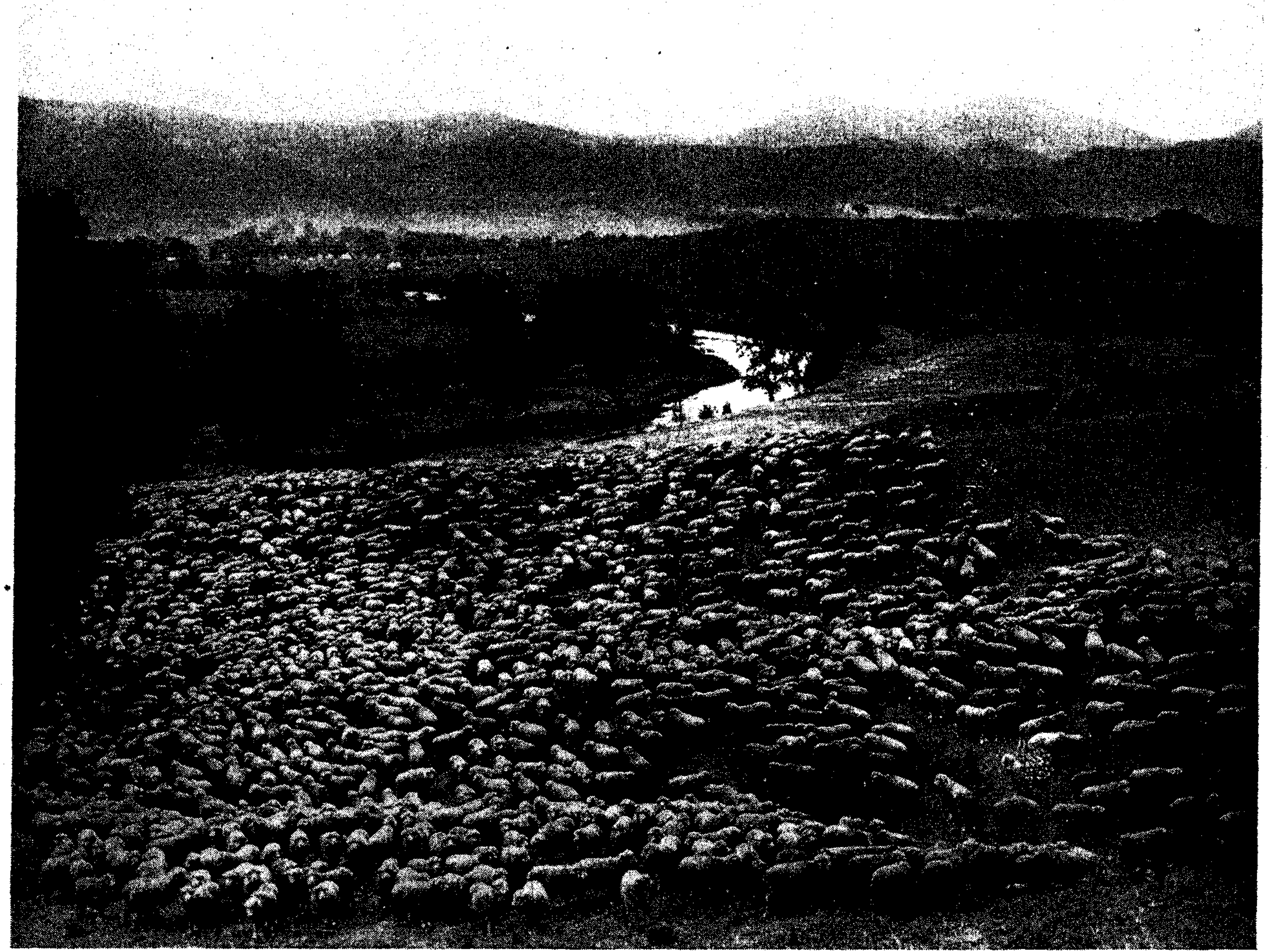
Benefits to farmers were, however, somewhat offset by higher costs: heavier taxation, speculation in land values—always the bane of New Zealand economic life—and the labour legislation. The minimum wage for an adult male worker was raised in 1937 to 45*s.* per week; in addition, workers get one week's holiday with pay, prescribed minimum standards of housing, and, in some cases, fixed hours of work. Labour difficulties have led to further mechanization. To-day, some 75 per cent. of all cows in New Zealand are machine-milked. Also, to raise productivity, an increasing proportion of the pasture—now nearly 20 per cent.—is top-dressed.

Canada.—The problem of Canadian agriculture is the problem of the three wheat States: Alberta, Saskatchewan, and Manitoba. It is a twofold problem: to maintain the productivity of these areas and to find markets for the produce. The period 1929–37 constitutes the third drought cycle of the last 40 years, and culminated in 1937 with the worst crop since 1914. Only in parts of Manitoba were yields above average. Throughout southern Saskatchewan might be seen miles of short stubble, the shrivelled blades of wheat which never grew. Federal relief in 1937 was estimated to cost over £3 millions, as in 1936. Estimates of the number of persons needing assistance varied between 200,000 and 400,000. During the year a quarter of a million cattle were transferred from Alberta and Saskatchewan to Manitoba, where pastures were sufficiently abundant. Of the remedies suggested, certainly mixed farming would be impracticable throughout most of the worst-stricken areas; so also would ranching, at any rate at present, though particular abandoned districts will be fenced off and grass allowed to grow. A good deal undoubtedly can be accomplished by planting still more shelter belts of trees to hold the soil; already during 1937 over 3 million young trees were distributed. In addition, irrigation schemes are being rapidly developed. Farmers are encouraged to try strip farming, leaving a strip of fallow between strips of wheat. Plant breeders are searching for more drought-resistant wheats; perennial wheat—really a type of grass—is being tried out as a forage crop.

Meanwhile, the other half of the Canadian problem—finding a wheat market—has not recently been acute, owing to crop failures. The Wheat Board has disposed of its stocks, and has not made purchases, since the market price has not fallen below the guaranteed price of 90 cents per bushel. Yet if the West again reaped an average harvest, it would be difficult to sell it abroad (*see* WHEAT). Clearly agricultural adjustment for Canada involves, not only soil conservation, but also acreage reduction.

United States.—After the Agricultural Adjustment Act had been declared invalid, assistance to farmers had to be reorganized, and in the autumn of 1937 a long-term programme for agriculture was announced. It included: planning exports, acreage goals, an ever-normal granary, crop insurance, retirement of submarginal land, and price adjustment payments. The 1937 wheat crop was 27 per cent. above the average for the previous five years. As a result, the United States will re-enter the export market, partly replacing the missing Canadian wheat exports. Government measures of 1937 included a Sugar Act, under which the secretary of agriculture is to determine total requirements, of which 45 per cent. may be imports, allocated in quotas among foreign suppliers. The secretary can determine 'fair and reasonable' wage rates in the industry and 'fair and reasonable' producers' prices. To cotton growers a loan of 9 cents per pound has been granted to help them not to throw their record 1937 crop too suddenly upon the market. Moreover, the government undertook to make up the farm price of cotton (on 65 per cent. of the crop) to 12 cents per pound. This may well prove costly. Compulsory cotton acreage reduction has been announced for 1938, and scientists are seeking alternative uses for the product. The troubles of the cotton belt have brought to the notice of the American public a problem of which they were largely unconscious—the extreme poverty of the thousands of small tenants and croppers and labourers who for years have been living on a subsistence minimum.

Over the country as a whole, however, 1937 was the most prosperous year experienced by farmers since 1926. Also the wages of the 1,600,000 hired agricultural workers rose by



Australian Trade Publicity

MUSTERING ON A SHEEP STATION, NEW SOUTH WALES, AUSTRALIA

some 15 per cent. during the year. Tenancy has spread in the United States until some 42 per cent. of all farms are held by tenants; the average length of occupancy is only 2 years. In 1937, a Farm Tenancy Act was passed, providing loans to tenants at 3 per cent. (repayment over 40 years) for the purchase of their holdings. When fully working, the scheme will provide $50 millions per annum for this purpose.

South America.—In the Argentine by the end of 1936 the wheat stocks held by the Cereals Regulation Board had been disposed of, and the world price stood above the internal price. Wheat prices continued to rise during 1937; furthermore, the 1937–38 crop is well below average, at 192 million bushels. A Grain Elevators Board has been set up to provide better storage accommodation. The meat industry would have been adversely affected by the ¾*d.* per pound tariff, imposed by Britain on chilled beef, had not the Argentine Government responded with a corresponding subsidy to production. Farmers are, however, by no means out of their difficulties, and the moratorium on farm debts has been extended for a further two years, as from the end of 1936.

In Brazil, the major agricultural problem remains the over-production of coffee. Throughout most of 1937 the policy of destroying coffee was continued, and altogether 52 million sacks were destroyed, 20 per cent. more than in 1936. But other countries took advantage of this to expand their exports, so that finally, in Nov. 1937, Brazil changed her policy and threw large stocks on to the world market, causing a severe price fall.

Western Europe.—During 1937, agriculture was chiefly affected by two sets of influences: by certain changes of policy on the part of those States which in 1936 had devalued their currencies, and by the more intense governmental activity of those States which are striving after self-sufficiency. Devaluation in France, Holland, and Switzerland was accompanied by a notable reduction in import duties on foodstuffs, as part of an attempt to prevent a great rise in the cost of living. Similarly in Germany and Italy there were reductions of duties, for instance, on cereals and fats. In France, however, the duties had to be increased again by 14 per cent. in view of the general economic situation. As examples of other devices to steady the cost of living, Holland reduced the tax on butter and Switzerland introduced whole wheat, in place of pure white, bread at the same price.

France has for some years been self-sufficient in the principal foodstuffs, that is, reckoning the North African colonies as part of the mother country, as, for fiscal purposes, they mostly are. Her problem is largely one of preventing over-production. The 'Wheat Office' had, in 1936, ordered a limitation of acreage as well as fixing the growers' price at 150 frs. per quintal (with adjustments for better or worse than average quality). For the 1937 harvest the price was fixed at 180 frs. per quintal, and the 'black market', where grain is sold at lower prices, is now of smaller dimensions than formerly. For 1938 the acreage limitation is to be supplemented by a quota, applied to all farmers selling more than 50 quintals (nearly 18 quarters). The aims are to keep the wheat acreage down and to prevent farmers sowing high-yielding types of wheat, which they tended to do when only the acreage was limited. During the last three years the output of horticultural and livestock produce has increased, while consumption has been virtually stationary, largely, no doubt, owing to lack of purchasing power among the masses. In consequence, these branches remain unprofitable. Farmers, for instance, get only 61 centimes per litre wholesale for milk.

In Germany, 1937 produced a cereal harvest well below average. During the autumn an order was issued compelling farmers to deliver all their ' bread grain ', *i.e.* wheat and rye, except that required for their household consumption ; none must be kept on the farm for stock feeding. The fixed price of wheat is 20–21 RM per quintal ; rye is 18 RM per quintal. Livestock slaughter quotas were decreed, ranging, according to type of animal, from 60 to 80 per cent. of the numbers slaughtered in 1934–35. Owing to the shortage of fats, monthly sales to retailers were limited to 80 per cent. of the quantity sold in Oct. 1936. Fats are made available on special terms to necessitous families, and this system has been extended. As a result of the drive towards autarchy, the agricultural output is 20 per cent. higher than it was 10 years ago (incidentally, so is the British agricultural output) and the proportion of total requirements produced at home has increased as follows :

PERCENTAGE HOME-PRODUCED

	1927 Per cent.	1936 Per cent.
Food (including fodder crops) . .	66	83
Agricultural raw materials (including wood, cotton, tobacco, oilseeds, etc.)	29	43

The government hopes to proceed still further by land improvement and land reclamation, on which 1,000 million RM are to be spent, and which, it is hoped, will increase the agricultural area by 3 million acres. On the other hand, between 1932 and 1937, about 1·6 million acres were taken out of agricultural use for aerodromes, manoeuvre grounds, motor roads, etc. During the year there was a general shortage of agricultural labour. For 1938, special arrangements have been made for large contingents of immigrant seasonal workers, particularly from Poland, Italy, and Holland. Also, to improve the quality of German farm labour, courses of training are being instituted both for farmers and for labourers.

In Italy, the self-sufficiency policy is pursued on somewhat analogous lines. Wheat farmers benefited in 1937 both from a good harvest and from the increase in the fixed price, which was raised from 125l. to 136l. per quintal. On the other hand, dairy farmers complained at getting only 0·67l. per litre for milk, whereas in certain dairying provinces investigations showed average costs of production to be about 0·97l. per litre. The livestock population has not been increasing sufficiently rapidly, while the human population is some 10 millions larger. It is reckoned that for Italy to become self-sufficient in beef, the cattle population must be increased by 18 per cent. Meanwhile, to remedy the deficiency, a campaign has been launched to popularize rabbit breeding.

The same tendency to autarchy can also be seen in the Irish Free State. Because of the curtailment of export markets for cattle and dairy produce, the wheat acreage has been expanded from 21,000 acres in 1931 to 255,000 acres in 1936. The proportion of home-grown wheat which must be used in milling was 3 per cent. in 1933–34 and 40 per cent. for 1937–38.

From the above brief summaries it must be plain that the European demand for imported foodstuffs is likely to be permanently smaller than before the depression. Since the bulk of world trade in agricultural products was to Europe, this is of major significance. By contrast, the importation of certain feeding stuffs for livestock, notably maize and oilseeds, is likely to increase, since the trend is towards an increased consumption of livestock products, and hence towards larger livestock populations. (P. L. Y.)

Eastern Europe.—In several countries of eastern Europe the harvest of 1937 maintained the good level of 1936, and in consequence there has been some alleviation of distress among the peasantry, which has continued unbroken since 1930. The wheat harvest in Rumania, Yugoslavia, and Bulgaria in these two years exceeded the 1930–34 level by 20 per cent., though in Rumania the effect was offset by a poor maize harvest. In Hungary and Poland, harvests were below the 1930–34 level. Export prices rose by 15 per cent., and the quantity of corn exported from the Danubian countries and Poland attained its 1930–34 level. Much of this increase was gained through the clearing agreements with Germany, under which the share of Germany in the total trade of these countries increased. In spite of the change in the world market price, no appreciable improvement can be expected so long as the states of western Europe adhere to the policy of autarchy. After the attempt to get preferential treatment for their corn surpluses from western Europe failed to meet with success, the Danubian States have attempted to foster the cultivation of industrial crops, fruit, and vegetables, but in this direction too the autarchy policy proves the main obstacle to a change in production, though on technical grounds this should be easy.

In all these countries the problem of agricultural overpopulation is now serious, and precludes improvement in farm technique. In Poland and Yugoslavia the hope of remedying this situation by any revival of agriculture seems very slight, and unless there is some resumption of international migration, the standard of living must continue to fall.

Soviet Russia.—Since 1936 the whole area of the Soviet Union has been farmed in large collective farms using tractors and harvesting machinery. From 1934 onwards the grain harvest has increased steadily, and the three years 1933–35 showed an increase of 13 per cent. over the pre-war level. For 1937, the preliminary estimates suggest a record harvest of 106 million tons, an increase of 25 per cent. compared with the pre-War period. If this estimate can be accepted, it would appear that the collectivization programme has almost succeeded, after a prolonged period of shortage, in increasing food production sufficiently to keep pace with the population increase, which has amounted to 30 per cent. during the period 1913–37. The increase has been made by extending the area under cereal cultivation by about 30 per cent. Since the collectivization began, new regions have been taken under the plough, mainly in large State farms. Until 1937, yields remained low (9 quintals per hectare), though the efforts now being made to increase production through raising yields seem to promise

High Commissioner for New Zealand]

AGRICULTURE IN NEW ZEALAND. DISCING, HARROWING, AND ROLLING, BEHIND ONE TRACTOR

success. On the livestock side collectivization has proved less successful. About half the livestock of the country was destroyed, and cattle production has not yet recovered, though pig production has now exceeded the pre-collectivization level. Efforts are being made to raise the quality of the livestock herds through artificial insemination.

Mechanization continues rapidly: in 1936, the tractors on machine tractor stations and collective farms numbered 424,000, and combines 90,000, as compared with 26,000 in 1926 and no combines. Rapid advance is being made in the production of industrial crops, flax, cotton, and hemp. The area under sugar-beet expands, and yields have risen by 150 per cent. (D. WA.)

Over the world as a whole, while, during 1937, the prices fell of many agricultural raw materials, such as rubber and wool, the prices of almost all foodstuffs rose. In many countries, especially overseas, the price rise was not much offset by higher costs of production, and farmers enjoyed some degree of prosperity. In many European countries costs of production rose faster than prices of produce—for instance, in France, Germany, Belgium, and Denmark—which has further reduced the purchasing power of the agricultural populations. The total value of the world agricultural output has been rising steadily since 1933. In 1936 it was 6 per cent. above the 1925–29 average, and in 1937, though no figures are yet available, it was at least 2 or 3 per cent. higher still. Europe's share of the world agricultural output increased from 36 per cent. in 1925–29 to over 40 per cent. in 1936.

It is often assumed that agriculture adapts itself only slowly and with difficulty to changes in demand, and it is true that overseas countries have found difficulty in adjusting themselves to the reduced European demand for cereals. Yet, on the other hand, they have shown an astonishing capacity for developing the production of other foodstuffs for which the market is expanding even in Europe, in particular the production of fruit. During the last 30 years the world trade in fruit has grown from insignificance to being, at over £75 millions, larger even in value than the world trade in wheat or meat. To give but one example: the canned fruit industry of Australia in 1926 produced 1,123,674 cases of apricots, pears, and peaches; by 1936, production had risen to 2,236,429 cases—the bulk going to the United Kingdom. Similar development has taken place in certain European countries. It is estimated that in France the total production of fruit of all kinds doubled between 1927 and 1937. In Bulgaria an entirely new fruit-exporting industry has developed during the last five years—chiefly grapes, dried plums, tomatoes, and apples. At the same time a big increase has occurred in most countries in the output of the other 'protective' foods: milk, eggs, and vegetables.

Developments in Technique.—Behind all these changes in output, and largely making them possible, is the change, which amounts almost to a revolution, in the technique and methods of agriculture. Certain aspects of the new technique are already generally familiar, especially mechanization—tractors, combine harvesters, milking machines, gyrotillers, rototillers, petrol-driven barn machinery, and so forth. The mechanical cotton picker may shortly come into ordinary use, and if so it will displace between 500,000 and 1 million workers in the United States alone. Other aspects of the revolution, in the realms of plant breeding and animal breeding, for instance, are less widely known, and a few examples may be given.

Work has been done on potatoes, by artificial hybridization with native South American varieties, of which there are scores growing in widely differing climates and soils. Some of the new hybrids prove resistant to serious virus diseases, such as wart disease ; others are resistant to cold, and can be cultivated successfully, even on the shores of the Arctic ocean, which may open up vast new tracts of country to potato growing, *e.g.* in Siberia. Another example is coffee production in Brazil. The crop is grown chiefly by small farmers employing primitive methods of cultivation and harvesting. In 1933, experimental stations were set up with the object, among other things, of improving the quality of Brazilian coffee. The bulk of the output was 'Rio' coffee, strongly flavoured, and fetching a lower price than the mild Santos coffee. Experiments soon showed that the flavour does not depend primarily upon the soil, as was hitherto thought, but upon the plant, the method of harvesting, and so on. Pulping factories have been built in the growing areas, substituting a new method of extracting the bean, in place of the farmers' shelling method. Trees have been provided to the growers to shade the coffee plant so that the berries do not become overripe before being picked. Most important of all, it was found that pulped mild coffee contains a fermentation, so that when some of this is mixed with dried berries, the ferment affects the whole and turns the coffee mild. Another innovation is the use of hybrid maize or Indian corn seed. Corn is normally cross-fertilized by the abundance of pollen produced by the surrounding plants in the field. In producing hybrid seed corn, the plant is artificially self-fertilized for several generations until the strain is considerably purified. Another strain is similarly self-fertilized. These two are then cross-fertilized to produce the hybrid seed. Self-fertilized plants are reduced in vigour, but seed from the first hybrid cross has remarkable vigour and usually greatly outyields ordinary corn. Yields may rise from 10 to 15 bushels per acre.

In the sphere of animal breeding, equally important advances are being made. The word 'breed' still means mainly the possession of certain outward characteristics which may or may not have any economic significance regarding the animal's performance. Breeding for performance means selection for productive capacity, for reproductive quality, and for resistance to disease. To improve productive capacity it is vitally important to choose sires and dams which have a good record. For instance, in breeding dairy cattle, a bull index is used which consists of the average yield of the bull's daughters corrected by the yield of their dams, *i.e.* so as to isolate the sire's influence. This selection of bulls may be combined with the new practice of artificial insemination, which is just coming out of the experimental stage. The finest proven bulls can then be used to sire several hundred cows, which may enormously improve yields.

A quite different innovation is the adoption of gas storage for fruit. It has been found that fruit keeps best, not in a cold store, but in a cool chamber, in which part of the oxygen is replaced by an equivalent quantity of carbon dioxide. This delays the respiratory action of the fruit, and hence lengthens its life-cycle. Cox's Orange Pippins are now kept in these stores from October to March. Plums will keep a month and certain vegetables also. As a result, the trade from overseas in the more perishable fruits is likely to develop considerably.

An even more startling achievement is Prof. Gierecke's 'dirtless farming' in California. Potatoes and tomatoes are grown, not in the earth at all, but indoors with their roots suspended in water to which the appropriate chemical solutions are added. Amazing yields per plant have been obtained by this method. Though it is not yet possible to undertake dirtless farming on a commercial scale in other areas where the climatic environment differs, yet ultimately this may prove to be the most important development in contemporary farming.

In view of all this wealth of discovery in agricultural science, it may be wondered why productive capacity does not increase more rapidly. It must, however, be recognized that there exist serious obstacles to the general adoption of the new technique. Some are economic ; others are of a different character. The principal economic obstacle is that the farming industry is composed all over the world of small family units. Even where the average farm acreage is large, as in the Dominions, neither the capital invested nor the annual turnover per farm is large, judged by industrial standards. In 1930, for example, the average gross annual output per farm was £560 in Great Britain, £460 in Canada, but in Italy only £100. The average size of farm in those three countries was 64 acres, 225 acres, and 20 acres respectively. On small areas it will not be economic to mechanize the operations of arable farming ; with such a small turnover farmers cannot afford to buy good-quality livestock ; with such a small income as is obtainable from these minute enterprises, farming is not likely to attract men intelligent enough to apply the latest findings of science.

Yet to-day the non-economic obstacles to progress in farming play perhaps an equally important part. More particularly on the continent of Europe it is widely believed that a large peasantry is of social, political, and military value, also that a State should be, as far as possible, self-sufficient in foodstuffs. Accordingly, any form of rationalization which would tend to replace agricultural labour by machinery is usually deliberately resisted, cheap supplies of food from overseas are shut out, and, when self-sufficiency has been attained in a particular commodity, every effort is made to keep the output constant and the methods of production static, so that the same output shall not come to be produced by a smaller number of persons—*e.g.* the French wheat policy (*see above*). It must be conceded that the discoveries of science have made such a policy possible at far less cost to the community than would have been the case even 20 years ago. Nevertheless, the preservation of these social values does entail a loss of material wealth, a substantial sacrifice of standard of living. (P. L. Y.)

AIR CONDITIONING. The year 1937 marked a substantial advance in the total installed horse-power of air-conditioning apparatus, as well as a rapid expansion in the general acceptance and understanding of the art. A number of definite trends are particularly important in the industry, as follows :

(1) **Unit Conditioners.**—It has been a generally accepted fact that the built-in central plant system provides the best performance at the lowest cost wherever a number of rooms, or where one large room is to be air conditioned. This is still true, but quite recently unit air conditioners of improved design and of relatively low cost have been produced, which give excellent performance in single rooms. The smaller of these conditioners are air cooled, and have capacities somewhat less than one ton. (A ton of capacity is equivalent in cooling effect to the melting of one ton of ice in 24 hours.) Such a conditioner embodies a refrigerating unit, blowers, control, and filters, all mounted in a cabinet of pleasing appearance, and it is entirely

portable, except for a duct connexion to the window, in order to supply outside air for condenser cooling and ventilation. This conditioner cools, dehumidifies, circulates, and cleans the air in the room, as well as providing outside ventilation air for odour control. It is designed primarily for single rooms in houses and flats, as well as for private offices.

Also, there are larger unit conditioners available up to several tons capacity, for use in small shops, as well as large offices. These are very similar to the ones just described, except that they are water cooled instead of air cooled. Also, they are designed to deliver the conditioned air in a horizontal plane, about 8ft. above the floor, where —because it is heavier than the air in the room—it falls slowly to the floor, giving even distribution without objectionable draft.

(2) **Central Plant Conditioners.**—The built-in central plant system is still the standard and proved method of air conditioning for most applications, although they have until recently presented the problem that no two conditioners are exactly the same. Each must accurately fit the application in number of included functions, capacity of each function, air flow, pressure drop, and power supply. Therefore the usual procedure was to purchase various parts from the most convenient suppliers and assemble them on the job. Hence, there was divided responsibility and lack of skilled factory design and testing of the unit as a whole.

To-day the reliable manufacturer, by means of a relatively few ingeniously designed sub-assemblies, makes available many thousands of combinations Thus, the purchaser receives a central plant air conditioner which is customarily fitted to his exact requirements, and at the same time it is completely factory designed, factory built, and factory tested. The responsibility for its successful performance is undivided.

(3) **New Applications.**—In the United States, a pioneer in the field, there is now an established trend towards air conditioning in the home. A great majority of the new houses built above the $7,500 class, and many below this class, install winter air conditioning, with all the advantages of heating, humidifying, circulating, and filtering. Many of these houses either install summer air conditioning with cooling and dehumidifying, at the same time, or they make provision for adding it later, using the blower, filters, ducts, and grilles of the winter conditioning system. Air conditioning for large stores and theatres has long been established, but now it is rapidly spreading to even the very small stores and theatres, as a sure way to attract more trade and increase profits. Two relatively new classes of application are apartments and hotel guest rooms. Both of these are growing rapidly, using unit conditioners for one or two rooms, and central plant conditioners for a group of rooms.

(4) **Benefits of Air Conditioning to Health.**—The benefits of air conditioning to health are not yet fully identified, although knowledge on this subject is improving. The benefits to hay fever and pollen asthma sufferers are well known. The benefits to convalescents and post-operative patients are becoming more and more understood. It is indicated that air conditioning may go a long way towards eliminating the inconvenience, lost time, and suffering which come from the common cold. Air conditioning does not directly kill bacteria, nor does it produce sterile air. It does, however, substantially reduce the bacteria count in the air, to the point where the natural body immunity can usually fight off the ravages of the remaining bacteria.

AIR FORCES OF THE WORLD. Air strength is normally reckoned in terms of first line aircraft—which represents the number of machines actually in service with formed units. Subject to certain qualifications, it gives a reasonable idea of the number of aircraft which could be engaged on the outbreak of war, and thereby enables some calculation of the scale of air attack that a country might launch. For each first-line machine, most countries aim to maintain three or four in reserve, to make up the wastage that is likely to occur during the first few months of a struggle, before the factories can attain their expanded war rate of production.

In these matters the difficulty of penetrating the veil of secrecy, combined with the apprehension of being bombed, gives rise to a natural exaggeration. In the case of the German Air Force, for example, its creation and expansion have been carried out with such secrecy as to encourage extreme estimates. Thus in 1934 the public abroad was startled by the declaration of a great newspaper magnate that Germany had 25,000 military aircraft. In 1935 he gave fresh figures—to the effect that Germany possessed 10,000 bombers each capable of carrying about a ton of explosives. If the estimate had not mounted as one might have expected, considering that there had been a year's interval for expansion, the picture was certainly painted on a large canvas. The Russians have a reputation for generous-size estimates of German military preparations: at the same period the Assistant Commissar for War credited the Germans with a total of 3,700 military aircraft, including reserves. Even this figure was considerably in excess of what French experts calculated—and the French, since 1914, are not inclined to minimize any menace that Germany possesses.

Actually, there is reason to doubt whether, at the end of 1935, the first-line strength of the German Air Force much exceeded a total of 600 machines. Expansion, however, has been moving rapidly to overcome the disadvantages of a late start. It is probable that by the spring of 1937 the German Air Force attained what is believed to have been its original goal—a first-line strength of 1,500 machines. That it did not reach this earlier was due to the difficulty of training personnel and organizing units as fast as the manufacture of machines, which has been proceeding at a rate that was probably in excess of the capacity to absorb them. The accident rate in training is reported to have been extremely high, although the details have been hidden. Another significant feature of the German Air Force is the high proportion of bombers of various types. Fully half the force appears to be composed of bomber squadrons of various kinds, and more than half of these are equipped with large machines that can carry a bomb-load of upwards of a ton, with a radius (out and back distance) of about 400 miles—far enough to reach the capitals of any of Germany's neighbours. But while the aeronautical properties of the German machines are good, those which have been seen in the Spanish war have compared unfavourably in speed and armament with the bombers of Russian, Italian, and American manufacture. The German fighting machines have been more impressive, although even with these their effectiveness and value have fallen off badly at heights over 12,000ft. Newer types of heavy bomber are coming into service, with a speed of over 200m.p.h. At the same time it is believed that a further expansion of the first-line strength is in progress, and by the spring of 1938 a total of

Wide World Photos]

GERMAN ANTI-AIRCRAFT GUNS IN ACTION DURING A MOCK AIR RAID, NUREMBURG, 1937

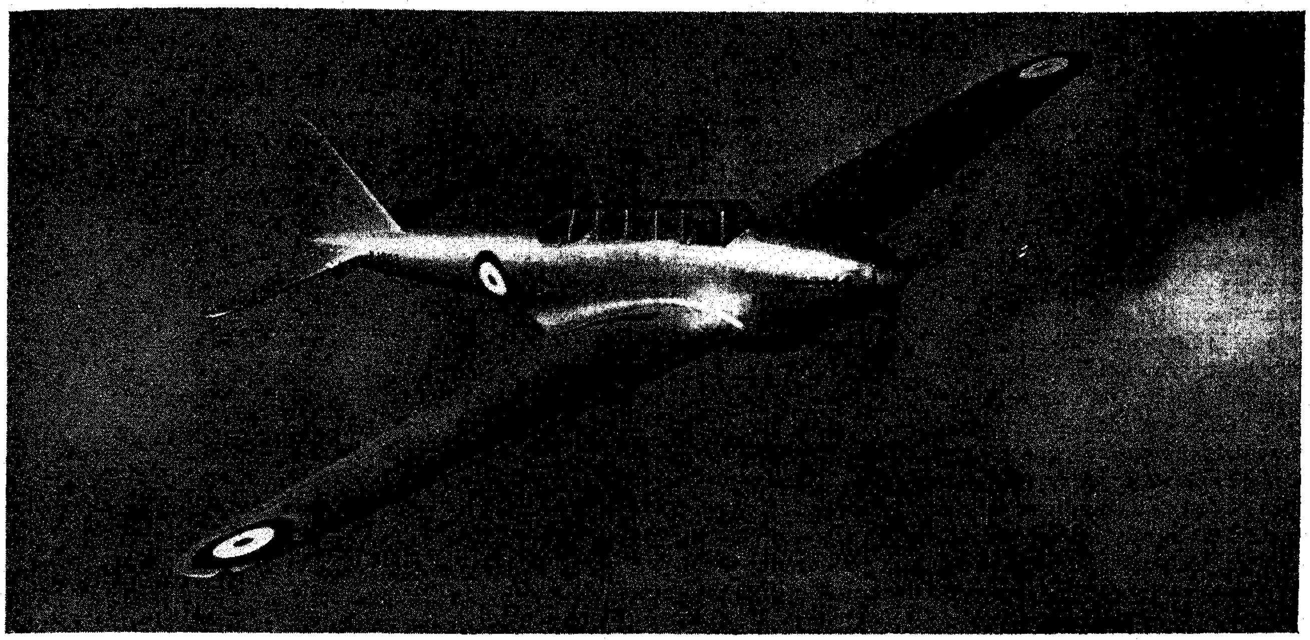
Wide World Photos]

FRENCH AIR FORCE MACHINES FLYING IN FORMATION OVER PARIS, JULY 1937

2,200 machines may be reached. The ultimate goal may be a first-line strength of 3,000 machines, with reserves of at least equal size.

In the past Germany specialized in the construction of civil aircraft that were easily and quickly convertible into military machines, and probably a further 200 could have been reckoned on this account. This asset, however, is now losing much of its old significance with the achievement of the air force expansion. So long as Germany was trying to hide the fact that she was developing a military air force, it was convenient to have a reserve of pseudo-civil machines that could be converted into bombers in emergency. Now the need for this device has passed. Nevertheless the pilots and personnel carry out several months' regular training each year, and there is little doubt that in war they would be immediately formed into regular squadrons, equipped with military aircraft which are held ready for them in peace time. The civil aircraft themselves would more probably be used for training purposes. There are also auxiliary and sports associations, in which well over 5,000 pilots are said to be in training; from these might emerge enough squadrons to form an additional force of 300–400 machines, besides providing reserve pilots for the Regular Air Force.

Italy is another country where the veil of secrecy has been tightly drawn. Since the expansion which followed the coming of the Abyssinian war, her actual first-line strength is probably about 1,500 machines, and may reach a total of 1,800 by spring, 1938. About a third of them are said to be bombers, while a considerable proportion of the fighters are designed for attack on ground targets. Out of the present number, nearly 200 are said to be still in Eritrea and Somaliland, engaged in clearing up the Abyssinian situation, and about the same number is in Libya and the Dodecanese. Her intervention in Spain has also entailed a considerable diversion of strength. But Italy can probably exercise the strategic mobility of her air force better than any other country with overseas possessions. For she can concentrate at home in peace, for training, and yet reinforce Libya and the Dodecanese at short notice whenever required. This strategic mobility is growing with the extending range of aircraft—and Abyssinia as well will soon be reinforcible by air as easily as Libya is to-day. Italy has now a large output of new types of bombers of high performance, with a speed of about 220m.p.h. and a radius of nearly 500 miles. These have been turned out by the factories as fast as possible. With such a radius it would be possible, from Libya, to reach, not only Alexandria but Port Said, and also the ports in southern Greece. Only the extreme ends of the Mediterranean would be beyond their reach. On the other hand, her strategic situation as a whole has weaknesses so marked that, on a sound calculation, they should be a check on rash impulses. Apart from the fact that so large a part of her land forces and resources are engulfed in East Africa, precariously dependent on a tenuous lifeline from the homeland, Italy's own situation has handicaps that are inherent in geography: her long coastline, the narrowness of the country, and the nearness of her main centres to the sea or to neighbouring frontiers, are factors that cannot be ignored. The factories which produce her new long-range instruments of warfare are themselves within uncomfortably short range of the less



Charles E. Brown]

THE FAIREY 'BATTLE', AN ULTRA-HIGH-SPEED 2-SEATER MEDIUM BOMBER, A BRITISH ALL-METAL MONOPLANE FITTED WITH A 12-CYLINDER ROLLS-ROYCE 'MERLIN' ENGINE

obvious points from which the forces of other countries might take off. Compared with France, for example, the strategic situation of Italy is on balance unfavourable for any contest in the air. Her vital centres are far more accessible than are those of France to the Italian air bases.

France, which for long had the largest air force in the world, has dropped behind. Her difficulty, indeed, has been to maintain the numbers she had while re-equipping them with new types and providing adequate war reserves. It is probable that her first-line strength early in 1937 was not much more than 1,400 machines, and of these barely 1,000 were available at home, half of them bombers, the rest being overseas, in North Africa, the Levant, Indo-China, etc. Moreover, most of the French machines are not of a very modern type, although new types of greatly improved performance began to come into service gradually from the early months of 1937. The number, too, is being increased 50 per cent. An existing factor which has to be taken into account is that France's proportion of bombers is much less than Germany's. But the new French machines will be of much larger bomb-capacity than at present.

The strength of the British Air Force, before an expansion programme was somewhat hurriedly embarked on in face of the ominous European situation, amounted to only 880 first-line machines. The process of expansion, moreover, has been complicated by Italy's invasion of Abyssinia and the consequent tension in the Mediterranean: the diversion of instructors to emergency duty naturally interfered with the training of new personnel. At the end of 1936 the total regular strength was just over 1,100. But the needs of India and the other overseas territories, as well as of the navy, reduced the total regular strength at home to a little under 900 first-line machines. Under the present programme of expansion, it was intended to reach a total of 1,500 by the spring of 1937, and 1,750 by the autumn, but the completion of the programme has suffered from delays.

The Fleet air arm has at present a first-line strength of some 220 machines, but five new aircraft-carriers of great size are now being built, and when these are added to the existing five, the total strength carried at sea will be little short of 700 machines. The new machines with which the British air force is being equipped include what are stated to be the fastest single-seat fighter and the fastest medium bomber in the world, the latter having a speed of 280 m.p.h. and the former considerably over 300m.p.h. The latest heavy bombers have a maximum speed of 220m.p.h., while their range is nearly 2,000 miles.

The Russian air force is now the greatest in Europe. Its first-line strength is reported to be over 3,500 machines, and may be as high as 4,000. While nearly three-quarters of the total are believed to consist of fighters and general purpose machines, it includes at least 400 large bombers of long radius—of which, because of her geographical distances, she has made a special point. The strength of the Russian air force, together with its striking range, forms the ground on which Hitler is claiming to go beyond the level of parity with the air forces of his Western neighbours. Another feature which Russia, like Italy, has developed, is the employment of swarms of machines designed for the attack upon ground targets, in conjunction with the army.

As seen in the Spanish Civil War, the performance of the Russian machines, both bombers and fighters, has exceeded expectations as much as that of the German has fallen short. Further, she has made better progress than many people imagined possible in training the mechanics and creating the ground organization on which the effective operation of an air force depends.

In 1936 the first-line strength of the Japanese air forces was reputed to consist of about 860 machines, and of these more than half were allotted to the navy. They were not of very modern types, and a significant feature was the small proportion of bombing machines. Since then there has been considerable development, especially in providing more bombing machines, which are now believed to constitute more than a third of the total, while their range has been increased to over 1,000 miles. The first-line strength may be approaching 1,400 machines, of which the naval air arm probably accounts for nearly 800, while that of the army is likely to see a further expansion.

The air forces of the world show marked differences in organization, which affect their development and methods of employment. There are two main types—those which have a separate administration and an independent command, and those which form an integral part of the army and navy. The British has been the most long-standing example of the first type, the Italian following its example in 1923 after Mussolini had come into power. France has more recently, and by degrees, conformed to the British model in the organization of her air forces, which are administered by the Air Ministry, and in general are under the operational control of the General Staff of the air forces. But in France, as in Britain, aircraft carried on board ship 'form an integral part of the naval forces', while 'naval co-operation aircraft not carried on board ship are at the disposal of the Minister of Marine'. In Germany there is an Air Ministry which is a part of the Reichswehr Ministry; and the Military Air Force, in common with the remainder of the armed forces, is under the command of the Reich Minister of War as commander-in-chief. The U.S.S.R., on the other hand, has her air force as a part of her army; and Japan, like the U.S.A., has her Military Aviation under the War Office and her Naval Air Force as a part of her navy. The lesser Powers have, generally speaking, not created a separate Air Ministry or an independent Air Command. Thus it may be said that the Great Powers are fairly equally divided in the type of control which they have adopted, while the smaller Powers, with an occasional exception, such as Sweden, have incorporated their air forces in the previously existing services. (B. H. L. H.)

Air forces in the United States comprise: (*a*) those assigned to and constituting the G.H.Q. Air Force; (*b*) those assigned to and constituting an integral part of corps and armies; (*c*) those assigned to each of the oversea departments; and (*d*) those assigned to the zone of the interior. The G.H.Q. Air Force combines the air corps tactical units in the continental limits of the United States. The commanding general of that organization directs and supervises the training activities and tactical manoeuvres of that force. The thorough and efficient work performed by the G.H.Q. Air Force has resulted in a present high state of tactical proficiency, stressing individual combat crew performance. Training concludes with tactical manoeuvres involving the transfer of groups and wings from coast to coast in perfect tactical mobility.

The United States army has more than 1,100 first-class planes; by June 30, 1940, the army air corps will have 2,320 planes. On Jan. 1, 1938, the navy had approximately 1,000 first-class planes, and 800 on order. On completion of the present programme (in 1941) to meet the needs of the Vinson-Trammel Bill, the navy will have approximately 2,000 planes.

Fox Photos]

NEW AIRPORT AT LE BOURGET NEAR PARIS. A VIEW OF THE INTERIOR

AIRPORTS. While airport construction began during the World War, it was not given serious attention until a few years later, when civilian flying was found to be greatly hampered by inadequate landing facilities. Because of the great cost of landing fields, their creation soon became a government function, and airport construction was thus undertaken in various parts of the world. In present usage 'airport' is applied only to a flying field which has been graded, drained, and provided with the necessary buildings and facilities for housing and handling aircraft. 'Flying field' is now applied to the portion of an airport which is used for taking off and landing and to unimproved areas which are used for flying operations. 'Emergency field' is used to designate an area (generally small and having no buildings of consequence) which is maintained for emergencies. Where regular service is operated, it has become common practice to provide emergency fields along the route—which thus becomes an 'airway'. This began soon after the first regular services, and has reached its highest development in the United States, where the Department of Commerce has under its direction over 22,000m. of airways equipped with lights or radio beacons or both. This great system links together 1,193 municipal and commercial airports, and includes 289 government-controlled emergency fields, of which total 643 are equipped for night flying. Airway marking began with light beacons, but foggy weather caused visibility troubles and inspired the development of radio beacons, which now form the main reliance of most airways. The American Municipal Association reported, in 1937, that 738 cities in the U.S. had constructed airports at a total cost of more than $300 millions. In this work the U.S. Works Progress Administration rendered valuable aid, and by Nov. 1937 its expenditures for airports and airways had exceeded $70 millions.

Current practice aims to provide airports which can be used regardless of wind direction, but accepts as tolerable those providing four landing and take-off directions, if these are distributed well around the points of the compass. Anything less is considered insufficient, and provision for at least eight-way take-off and landing is expected in a first-class airport. Grass turf was originally used for the flying field areas, but the growth of traffic is steadily forcing the substitution of hard surfacing for the portions most used. These areas are called 'runways', and the paving of runways with macadam, asphalt, concrete, or similar materials, has produced the distinctive pattern of crossed strips which now marks an airport as seen from the air. Airports and their runways vary greatly in size, being governed by many conditions, such as the surroundings and altitude, as well as by the volume and kind of traffic. So far as one may generalize, a first-class airport should have an area of 300 to 400 acres or more; it should have runways at least 3,500ft. long and one of them should be as close as possible to 5,000ft. in length. With the coming of larger and more heavily loaded aeroplanes the tendency is towards further increase in area, and several airports already have runways well over 4,000ft. long.

Plan.—The arrangement most generally accepted for airports is that of grouping all buildings at one side of the plot in order that the other sides be free of obstructions. However, the plots vary so much in shape that each airport takes on its own individual characteristics, and it becomes impracticable to call any one ' typical '. It is equally difficult to point to specific airports as ' best ' or ' biggest ', because of the constant improvement and the divergent conditions. Taking area as one criterion, the Municipal Airport of Cleveland, Ohio, ranks as largest with its total of 1,040 acres. The most centrally located airport (with respect to a large city) is undoubtedly Tempelhof, Berlin's main airport, which is well within the city and on a subway line. The Municipal Airport of Newark, N.J., handles the greatest volume of traffic, averaging a total of 265 landings and take-offs daily, 130 of these being movements of big airliners. The Municipal Airport of Chicago, Ill., ranks second, and follows closely upon Newark in traffic volume. Increasing volume of traffic forced the development of airport traffic control systems, of which the Newark installation is probably the outstanding example. Experiments in traffic control began almost 20 years ago (using signal lights), but only within the past few years has there been any need of a practical system. Even yet, this need exists only at the busiest airports. The radio telephone is now used, although signal lights are also provided for directing aeroplanes which have no radio equipment. A glass-enclosed tower is usually provided, on top of one of the buildings, to give the traffic controller a full view of the airport and its surroundings. Here are the landing light switches, signal lights, telephones and radio for communication with pilots of approaching aircraft or those on the surface and about to take off. Using methods like those of a train dispatcher, the traffic controller directs the movements of all aircraft in the vicinity—whether in the air or on the ground.

Safety.—As airway traffic increased, it brought a pressing need for some method of control to avoid collisions, particularly during conditions of poor visibility. The method now in use depends upon radio communication with the pilots; airliners operating over important routes maintain regular communication with control stations along their routes. Through radio telephony the pilots are notified of weather changes, the proximity of other aircraft, and similar information. Flying along an airway each aeroplane is expected to maintain a pre-arranged altitude, and to fly somewhat to the right of the centre of the airway as indicated by the signals emanating from its radio beacons. These beacons emit two signals which merge into a steady hum when the aeroplane is on the course, because it thus receives both signals with equal intensity. Divergence to either side causes that signal to come in stronger than the other, thus informing the pilot when he is off his course as well as indicating the side to which he has drifted. Radio transmission has also been used for effecting ' blind ' landings of aeroplanes in Europe and the United States. This method depends upon the reception of special local signals which are picked up when approaching the airport. These signals keep the pilot informed of his position and altitude with respect to the runway on which he is to land, and make it possible to effect a landing with reasonable safety even in fog conditions.

Among some of the recent developments of importance there might be noted the construction just completed at Le Bourget, near Paris, and that which is going on at Tempelhof, Berlin. On June 13, 1937, the Singapore Airport was opened. This was built on the site of a swamp, and cost £4 millions. It is for the use of Imperial Airways' Europe–India–Malaya service, the Quantas Imperial Airways' Australia–Singapore service, and the Dutch K.L.M. Amsterdam–Batavia service. Work has also been started on a new 365-acre airport at Belfast, which will be one of the finest in the United Kingdom. Other important airports, recently completed or under construction, are in Newfoundland, at Lydda, and at Elmdon (Birmingham), and Ringway (Manchester). Perhaps the most daring of recent airport developments is the chain of facilities dotting the Pacific ocean to provide bases for one of the routes of the Pan-American Airways system. This company utilizes airport facilities at 167 'ports of call'; including other airports and special emergency facilities, it has more than 300 bases in all. The Pacific chain includes many unusual airports, one being the Wake Island base, which had to be constructed on a tiny and formerly uninhabited island over 1,000m. from the nearest other land in the Pacific. Despite the difficulties surrounding such construction, less than six months elapsed between inception and actual completion of the entire Pacific chain.

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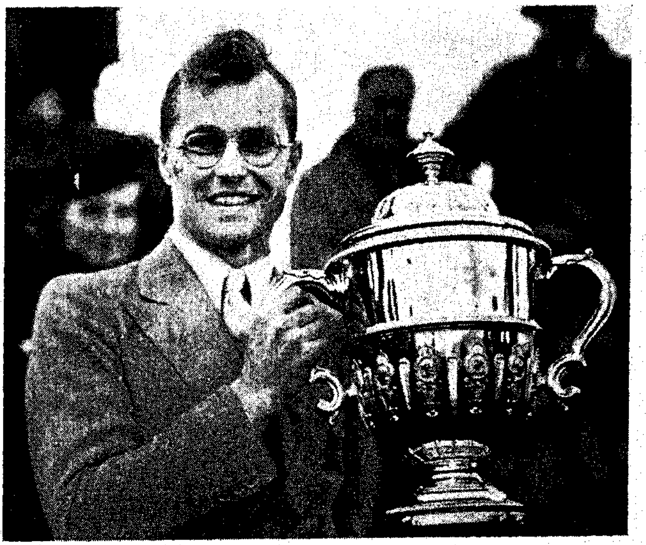
AIR RACES. Italian fliers won the Istres-Damascus-Paris air race, reaching Le Bourget airport in first, second, and third places, thereby winning a total of about £22,600 in cash. The winning 'plane was flown by Lieut.-Com. Samuele Cupini and Captain Amedeo Paradisi. They covered the 3,800-mile route in 17hrs. 32mins. 45·2secs., an average of 219m.p.h. The King's Cup air race, flown on Sept. 11, was won for the second successive time by C. E. Gardner, flying in a Percival Mew Gull, at an average of 233·7m.p.h. Frank W. Fuller of San Francisco, Calif., captured the Bendix transcontinental air race, most famous American air Derby, at 265 miles an hour.



Wide World Photos]

C. E. GARDNER, WINNER OF THE KING'S CUP AIR RACE, WITH THE TROPHY

AJMER-MERWARA. A province of British India, surrounded by Rajputana; area, 2,711sq.m.; population 560,292, of whom three-fourths are Hindus. Rajasthani is the prevailing language, and 17 per cent. of the males and 3 per cent. of the females are returned as literate in their vernacular. The area forms a Chief Commissionership, with Ajmer (pop. 119,524) as its capital. The famous Mayo College, for the cadets of noble Rajput families, is at Ajmer. Only about one-fifth of the area is cultivated, Merwara being largely a tract of infertile hills. One-third of the cultivated area, however, is irrigated, and the coarser food crops, with a certain amount of cotton, are grown. Asbestos, mica, and garnets are found in the hills, and stone is largely worked and exported. The chief industries are the weaving, printing, and dyeing of cotton fabrics, not on a factory scale.

ALABAMA: *see* UNITED STATES OF AMERICA.

ALASKA. The year 1937 marked definite progress in the development of Alaska. A resolution adopted by the first session of the seventy-fifth Congress provided for the study of Alaska's resources and recommendations for a long-range programme of improvements. The study was completed at the close of the year for presentation to Congress. An important step in the development of Alaska for tourists was the construction by the government, in Mt. McKinley National Park, of a hotel, to be completed in the summer of 1938, as the beginning of a park-development scheme. Some 85m. of road within the park have been completed, and more are under construction. Ten new airports also are under construction. Alaska's chief products are fish, metals, and furs. The year 1936 showed the largest production in fish, with a total of 524,042,666lb., valued at $50,455,272. The salmon pack was the largest ever recorded, with a total of 8,437,603 cases (48 1-lb. cans to the case). Alaska mined $23,694,000 worth of minerals in 1936. Lode gold rose to $7,105,000 in 1936, and placer gold to $11,328,000. Receipts from sealskins were $251,112. Under a conservation policy, the sealskin herd has grown steadily, numbering 1,839,119 in 1937. The value of other furs shipped from the territory was $1,932,894. Public works projects completed included the dredging and deepening of Sitka harbour; the deepening of Petersburg harbour, and the dredging of a fishing-boat basin; and five municipal improvement schemes.

ALBANIA (Shqipni). A kingdom on the west coast of the Balkan peninsula, lying between Greece and Yugoslavia. Capital, Tirana. Albania is governed by a king, Zog I, created 1928, with a cabinet and single House of Parliament. Flag, black double-headed eagle on red ground.

Area and Population.—Area, approx. 11,000sq.m. Population at 1930 census, 1,003,100; 71 per cent. Moslem, 19 per cent. Albanian Orthodox, 10 per cent. Roman Catholic. Language, Albanian of Indo-European origin; two principal dialects, Geg, northern, and Tosk, southern. Public education is administered by the State; elementary education compulsory from age of seven for five years where schools exist. Number of schools: elementary and kindergarten, 615; secondary, 18, including 5 for girls, 1 coeducational, and 5 professional.

History.—The cabinet of M. Kotta, formed Nov. 1936, continued in office; parliamentary elections were held in January. At the request of the Moslem community, the veil for women was made illegal, also the fez with European dress. On Nov. 28 was celebrated the 25th anniversary of independence.

TIRANA (POP. 30,806), CAPITAL OF ALBANIA. THE PHOTOGRAPH SHOWS THE AVENUES ZOG AND DURESSI.

Relations with Italy became closer owing to the operation of the economic agreements of 1936, and Count Ciano visited Tirana in April to give assurances that the Italo-Yugoslav accord of March was not directed against Albania's independence. An agreement was made with Greece for the exchange of outlaws. The independence of the Albanian Orthodox Church was finally recognized by the Patriarchate of Istanbul.

Trade, Communications, and Finance.—The main industries are agricultural and pastoral. In 1937 the State Agrarian Bank was opened, agricultural agents appointed for the instruction of farmers, and corps of forest guards and veterinary police formed. Total exports (1936) were £482,767 and imports £1,089,460, principal exports being cheese, hides, crude oil, wool, eggs, and livestock; and imports textiles, cereals, petrol and kerosene, machinery, and sugar.

The currency is the gold franc; current rate 15·40 = £1. Currency notes and coinage are issued by the National Bank of Albania. Budget figures, 1937–38, were: income £1,706,155, expenditure £1,705,506. Principal direct taxes are on property, income, profits, cattle, and tithe on crops; indirect taxes are on imports, alcohol, and tobacco.

Defence Forces.—Compulsory military service of 18 months is in force, with pre-military training from age of 15. The strength of the Army is approximately 13,000. There is no Navy or Air Force. Internal order is secured by a gendarmerie of 3,600.

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ALBERTA, the most westerly of the three prairie provinces of Canada, was created a province by Act of the Dominion Parliament, Sept. 1, 1905. The province has a total area of 255,285sq.m. and a population of 772,000 (estimate, Dominion Bureau of Statistics, 1936). The seat of government is Edmonton. The present Social Credit Government has been in office since Sept. 3, 1935.

The preliminary estimate by the Dominion Department of Agriculture places the gross farm value of field crops for 1937 at $129,632,000. This can be compared with $104,523,000 in 1936. Other branches of production maintained a consistent level. The oil-fields of the Turner valley produced 852,829bls. of naphtha and 1,864,472bls. of crude oil as compared with 1,048,671bls. of naphtha and 238,567bls. of crude oil in 1936. A reduction of the railway rate on crude oil in Aug. 1926 from 75·6c. to 52·2c. per barrel between Calgary and Regina, Saskatchewan, aided the industry.

The budget, presented in March, showed a deficit of

$1,125,000 and a total debt of $159,000,000. Alberta bonds in default amount to $6,100,000. Political events during the year were significant. On Feb. 19 the Alberta Supreme Court ruled unconstitutional the Reduction and Settlement of Debts Act, a measure passed by the legislature in 1936 to reduce the principal and interest on private debts. Substitute legislation was then introduced which was also declared unconstitutional by the Alberta Court of Appeal on April 4. On April 7, the Government officially announced the abandonment of the scrip money experiment begun the previous year.

At the first special session of the legislature in August, a bill was passed to regulate and license banking. This was disallowed by the Dominion Government on the grounds that the act infringed on Federal rights. A second special session was called on Sept. 24. Three acts passed, dealing with banking, debts, and the press, were reserved for assent and reference to the Federal Government by J. C. Bowen, lieutenant-governor. Mr. Aberhart, premier of the province, challenged the power of the Federal Government to disallow any provincial act. The question has been placed before the Supreme Court of Canada.

(*See* also SOCIAL CREDIT.) (J. T. C.)

ALDRICH, RICHARD, American music critic; born at Providence, R.I., July 31, 1863; died in Rome, June 2, 1937. A biographical note may be found in the *Ency. Brit.*, vol. I, p. 552.

ALEPPO: *see* SYRIA AND LEBANON.

ALEXANDRETTA, SANJAK OF. One of the first results of the Franco-Syrian treaty of 1936 was to revive Turkey's claims to the Sanjak of Alexandretta. This strange district contains a large Turkish minority, the population of 220,000, consisting of 85,000 (or 39 per cent.) Turks, 62,000 Alouites, 22,500 Sunnite Arabs, 49,000 Christians (including 25,000 Armenians), 5,000 Kurds, 1,000 Circassians, 500 Jews, and 900 mixed. The Ankara government objected on principle to men of Turkish race being placed in subjection to Arab authority, and insisted upon the independence of the Sanjak, reserving to themselves the right to annex the territory to the national State later on. France could not contemplate lending her assistance to Pan-Arab ambitions by forcibly opposing Ankara's claim, but aimed at conciliation and pacification, and through her the dispute was brought before the Council of the League of Nations. The Council first demanded an inquiry, and sent three neutral observers into the Sanjak. After an examination of their report and several exchanges of views, the Council achieved the conclusion of a Franco-Turkish agreement (May 29, 1937). The following is an analysis of this very complicated document. It consists of:

(1) *A treaty guaranteeing the territorial integrity of the Sanjak.* France and Turkey engaged reciprocally, under the auspices of the League of Nations, to guarantee the territorial integrity of the Sanjak.

(2) *Agreement guaranteeing the frontier between Turkey and Syria.* 'Art. 3. Until such time as, in consequence of a decision of the League of Nations, the responsibility for the foreign relations of Syria shall be transferred to the Syrian Government, France will continue to guarantee the Turco-Syrian frontier for as long as particular relations subsist between France and Syria'.

(3) *General Declaration.* 'France and Turkey . . . notify their agreement in favouring the accession of Syria and Lebanon to a full exercise of their independence and sovereignty'. There follows an agreement regarding property, option of nationality, etc.

In June 1937, the Council of the League of Nations promulgated a Statute and a Fundamental Law regarding the Sanjak. The Statute stipulates that the Sanjak should henceforth enjoy full independence in the conduct of its internal affairs. The Fundamental Law includes two kinds of dispositions: on the one hand, the recognition of 'fundamental rights' applying to all the inhabitants of the territory (liberty of the individual, liberty of conscience, etc.); and on the other hand, the organization of legislative, executive, and judiciary powers. Legislative powers are to be exercised by an Assembly elected by universal suffrage. The elections are to be conducted in two stages; they will take place in the near future.

In order to ensure the observance of the Statute and the Fundamental Law, the Council of the League of Nations attributes to itself a power of control which it will exercise through the agency of a permanent delegate of French nationality. (R. PIN.)

ALGERIA, a North African country forming an integral part of France, under a governor-general. It is divided into the departments of Algiers, Oran, and Constantine, and covers an area of about 222,120sq.m. between long. 4° 36′ W. and 6° 16′ E., and lat. 37° 6′ N. to about 30° N. Population (1936), 7,234,684 (987,252 Europeans).

History.—The Arab nationalist movement was active in 1937 throughout French North Africa, and its agents are working for an Islamic revival and receive particular attention among the *ulemas*, whose leader in Algiers is M. Ben-Badis.

The coming into power of the Front Populaire was the cause of widespread disturbances. This party included among its members the very men who had encouraged the most daring demands of the natives. The unrest did not spread beyond the towns and was chiefly attributable to small groups of young men. How high feeling ran had been demonstrated on Aug. 2, 1936, with the assassination of the Mufti of Algiers, whom the *ulemas* reproached for his devotion to France. A delegation of *ulemas* visited Paris in October and brought back vague promises from M. Léon Blum. The *ulemas* and the reformers were soon surpassed by the extremists, whom the governor-general, Le Beau, had to suppress firmly. The bad harvest of 1936 aggravated want and created a soil propitious for subversive propaganda. The application of the social laws of 1936 was another source of difficulties.

The Viollette proposal to grant electoral rights to certain categories of natives was discussed passionately; but the native leaders wanted to acquire French electoral rights while retaining their personal status as Moslems, so the project came to nothing. By a decree of Feb. 26, 1937, the anti-French association *l'Étoile Nord-Africaine* was at last dissolved, but revolutionary propaganda showed no signs of abating. Riots occurred in many places (as at the factories at Kouif, on March 9). A decree of the governor-general of April 16 reorganized the general direction of native affairs and of the southern territories. By a decree of Oct. 9, completed on Nov. 10, the Government delegated M. Albert Sarraut, minister of State, to control and co-ordinate the whole of French policy in northern Africa. This marks the inauguration of a policy of authoritarian reforms which should bring about order and respect for French power.

The 1937 budget amounted to 1,590 million francs. Trade for 1936 was valued at 5,612 million francs, surpassing the figure for 1935 by 155 million francs. Imports, 3,078 million francs; exports, 2,534 million francs.

AMBASSADORS AND MINISTERS (GREAT BRITAIN):

(*A.* = Ambassador; *E.* = Envoy-Extraordinary; *M.-P.* = Minister-Plenipotentiary; *M.-R.* = Minister Resident; *Ch. d'A.* = Chargé d'Affaires; *C.-G.* = Consul-General; *C.* = Consul.)

Country	To Great Britain	From Great Britain
Afghanistan	Sirdar Ali Muhammad Khan (*E.*, *M.-P.*), 1933	Lt.-Col. W. K. Fraser-Tytler, C.M.G. (*E.*, *M.-P.*), 1935
Albania	M. Lec Kurti (*E.*, *M.-P.*), 1936	Sir A. Ryan, K.B.E. (*E.*, *M.-P.*, *C.-G.*), 1936
Argentina	Sr. Dr. Don Manuel Malbran, G.B.E. (*A.*), 1931	Sir Esmond Ovey, K.C.M.G. (*A.*), 1937
Austria	Baron Georg Franckenstein (*M.-P.*), 1920	C. M. Palairet, C.M.G. (*E.*, *M.-P.*), 1937
Belgium	Baron E. de Cartier de Marchienne, G.C.V.O. (*A.*), 1927	Rt. Hon. Sir Robert H. Clive, G.C.M.G. (*A.*), 1937
Bolivia	Sr. Don Placido Sanchez (*E.*, *M.-P.*), 1937	E. C. D. Rawlins, C.M.G. (*E.*, *M.-P.*, *C.-G.*), 1937
Brazil	Sr. Dr. Régis de Oliveira, G.B.E. (*A.*), 1924	Sir Hugh Gurney, K.C.M.G. (*A.*), 1935
Bulgaria	M. Simeon Radeff (*E.*, *M.-P.*), 1935	M. D. Peterson, C.M.G. (*E.*, *M.-P.*), 1936
Chile	Sr. Don Augustin Edwards, G.B.E. (*A.*), 1935	Sir C. H. Bentinck, K.C.M.G. (*A.*), 1936
China	Quo Tai-chi (*A.*), 1932	Sir Hugh M. Knatchbull-Hugessen, K.C.M.G. (*A.*), 1936 Sir Archibald Clark Kerr, K.C.M.G. (*A.*), 1938
Colombia	Sr. Don Luis Tamayo (*E.*, *M.-P.*)	M. B. T. Paske-Smith, C.B.E. (*E.*, *M.-P.*), 1936
Costa Rica	(*Vacant*)	F. E. F. Adam (*E.*, *M.-P.*), 1934
Cuba	Don G. de Blanck y Menocal (*E.*, *M.-P.*), 1937	H. A. Grant-Watson, C.M.G. (*E.*, *M.-P.*), 1936
Czechoslovakia	M. Jan Masaryk, C.B.E. (*E.*, *M.-P.*), 1925	B. C. Newton, C.M.G. (*E.*, *M.-P.*, *C.-G.*), 1936
Denmark	Count Eduard Reventlow (*E.*, *M.-P.*), 1937	Hon. Sir P. W. M. Ramsay, K.C.M.G. (*E.*, *M.-P.*), 1935
Dominican Republic	Sr. Don M. H. Ureña (*E.*, *M.-P.*), 1935	A. S. Paterson (*M.-R.*, *C.*), 1935
Ecuador	Dr. Antonio Quevedo (*Ch. d'A.*, *C.-G.*), 1937	G. H. Bullock (*E.*, *M.-P.*), 1937
Egypt	Dr. Hafez Afifi Pasha (*A.*), 1936	Sir Miles Lampson, G.C.M.G. (*A.*), 1936
Estonia	M. August Schmidt (*E.*, *M.-P.*), 1934	C. W. Orde, C.M.G. (*E.*, *M.-P.*), 1937
Finland	M. Georg Gripenberg (*E.*, *M.-P.*), 1933	T. M. Snow, C.M.G. (*E.*, *M.-P.*), 1936
France	M. Charles Corbin (*A.*), 1933	Rt. Hon. Sir Eric Phipps, G.C.M.G. (*A.*), 1937
Germany	Joachim von Ribbentrop (*A.*), 1936	Rt. Hon. Sir Nevile M. Henderson, K.C.M.G. (*A.*), 1937
Greece	M. C. Simopoulos (*E.*, *M.-P.*), 1934	Sir S. P. P. Waterlow, K.C.M.G. (*E.*, *M.-P.*), 1933
Guatemala	Sr. Dr. Don Francisco A. Figueroa (*Ch. d'A.*)	J. H. S. Birch (*E.*, *M.-P.*, *C.-G.*), 1933
Haiti	M. Léon Défly (*M.-R.*), 1937	W. R. Mackness (*M.-R.*, *C.*), 1937
Honduras	B. Basilio de Telepnéf (*C.-G.*)	J. H. S. Birch (*E.*, *M.-P.*, *C.-G.*), 1933
Hungary	M. Constantin de Masirevich (*E.*, *M.-P.*), 1936	Sir G. G. Knox, K.C.M.G. (*E.*, *M.-P.*, *C.-G.*), 1935
Iceland	*See* Denmark	John Bowering (*C.-G*).
Iran	Ali Sohcily (*M.-R.*), 1937	H. J. Seymour, C.M.G. (*E.*, *M.-P.*), 1936
Iraq	Seyid Rauf Chadirji (*E.*, *M.-P.*), 1937	Sir Archibald Clark Kerr, K.C.M.G. (*A.*), 1935
Italy	Count Dino Grandi (*A.*), 1932	The Earl of Perth, G.C.M.G. (*A.*), 1933
Japan	Shigeru Yoshida, K.C.V.O. (*A.*), 1936	Rt. Hon. Sir Robert L. Craigie, K.C.M.G. (*A.*), 1937
Latvia	M. Karlis Zarine (*E.*, *M.-P.*), 1933	C. W. Orde, C.M.G. (*E.*, *M.-P.*), 1937
Liberia	(*Vacant*)	A. E. Yapp (*Ch. d'A.*), 1934
Lithuania	M. B. K. Balutis (*E.*, *M.P.*), 1934	C. W. Orde, C.M.G. (*E.*, *M.-P.*), 1937
Luxemburg	(*Vacant*)	Rt. Hon. Sir Robert H. Clive, G.C.M.G. (*E.*, *M.-P.*), 1937
Mexico	Sr. P. Villa Michel (*E.*, *M.-P.*), 1937	O. St. C. O'Malley, C.M.G. (*E.*, *M.-P.*), 1937
Monaco	R. Le Mesurier (*C.-G.*)	
Nepal	Lt.-Gen. Krishna Shumshere Jung Bahadur Rana (*E.*, *M.-P.*), 1935	Lt.-Col. F. M. Bailey, C.I.E. (*E.*, *M.-P.*), 1935
Netherlands	Count John Paul van Limburg Stirum (*E.*, *M.-P.*), 1937	Sir H. Montgomery, K.C.M.G. (*E.*, *M.-P.*), 1933
Nicaragua	Sr. Dr. Don C. Herdocia (*E.*, *M.-P.*)	J. H. S. Birch (*E.*, *M.-P.*, *C.-G.*), 1933
Norway	E. A. Colban (*E.*, *M.-P.*), 1934	Sir Cecil F. J. Dormer, K.C.M.G. (*E.*, *M.-P.*), 1934
Panama	Sr. Dr. Don Arnulfe Arias (*E.*, *M.-P.*), 1937	F. E. F. Adam (*E.*, *M.-P.*, *C.-G.*), 1934
Paraguay	Sr. Dr. Don Rogelio Espinoza (*Ch. d'A. ad int.*)	Sir Edward Ovey, K.C.M.G. (*E.*, *M.-P.*), 1937
Peru	Sr. Don A. Benavides (*E.*, *M.-P.*), 1933	V. C. W. Forbes (*E.*, *M.-P.*), 1934
Poland	Count E. Raczynski (*A.*), 1934	Sir H. W. Kennard, K.C.M.G. (*A.*), 1935
Portugal	Dr. Armindo Monteiro (*A.*), 1937	Sir Walford H. M. Selby, K.C.M.G. (*A.*), 1937
Rumania	M. Basil Grigorcea (*M.-P.*), 1937	Sir R. H. Hoare, K.C.M.G. (*E.*, *M.-P.*), 1934
Salvador	(*Vacant*)	J. H. S. Birch (*E.*, *M.-P.*, *C.-G.*), 1933
San Marino	Grand Uff. M. A. Jamieson (*C.-G.*)	
Sarawak	F. F. Boult (*Government Agent*)	
Saudi Arabia	Sheikh Hafiz Wahba (*E.*, *M.-P.*), 1930	Sir R. W. Bullard, K.C.M.G. (*E.*, *M.-P.*), 1936
Siam	Rear-Adml. Phra Rajawongsan, C.B.E. (*E.*, *M.-P.*), 1935	Sir J. Crosby, K.B.E. (*E.*, *M.-P.*), 1934
Spain	Sr. Don Pablo de Azcárate y Flórez (*A.*), 1936	Sir H. G. Chilton, G.C.M.G. (*A.*), 1935
Sweden	Baron E. K. Palmstierna, G.C.V.O. (*E.*, *M.-P.*), 1920	Sir E. St. J. D. J. Monson, Bt. (*E.*, *M.-P.*), 1937
Switzerland	M. C. R. Paravicini (*E.*, *M.-P.*), 1919	Sir G. R. Warner, K.C.V.O. (*E.*, *M.-P.*), 1935
Turkey	Bay Ali Fethi Okyar (*A.*), 1934	Rt. Hon. Sir P. Loraine, Bt., G.C.M.G. (*A.*), 1933
Uruguay	Sr. Don Alberto Guani (*E.*, *M.-P.*), 1936	E. Millington Drake (*E.*, *M.-P.*), 1933
U.S.A.	Robert W. Bingham (*A.*), 1933 Joseph Patrick Kennedy (*A.*), 1938	Rt. Hon. Sir Ronald Lindsay, G.C.M.G. (*A.*), 1930
U.S.S.R.	I. M. Maisky (*A.*), 1932	Viscount Chilston, G.C.M.G. (*A.*), 1933
Vatican	—	F. D'A. G. Osborne, C.M.G. (*E.*, *M.-P.*), 1935
Venezuela	Sr. Dr. Alejandro Lara (*E.*, *M.-P.*), 1936	E. F. Gye, C.M.G. (*E.*, *M.-P.*), 1936
Yugoslavia	M. D. Kassidolatz (*E.*, *M.-P.*), 1937	Sir R. H. Campbell, K.C.M.G. (*E.*, *M.-P.*), 1935

AMERICAN FEDERATION OF LABOR, THE. The history of the foundation of this organization, and of its founder, Samuel Gompers, may be read in the *Ency. Brit.*, vol. 1, p. 768, and vol. 10, p. 511.

The American Federation of Labor in 1920 reported a dues-paying membership of 4,078,740. In 1933, its membership dropped to 2,126,796. On Aug. 31, 1937, the federation consisted of 100 national and international unions; 1,406 local labour unions in the U.S. and Canada; 49 State federations, and 738 city central bodies, with a membership of 3,271,726. It lost a membership of approximately 1 million in 1936, when it suspended the unions of the Committee for Industrial Organization (*q.v.*), but during the following year the federation redoubled its organization efforts and regained in new members most of the C.I.O. loss. The president of the American Federation of Labor is William Green, a former coal-miner and former official of the United Mine Workers of America.

The federation has a threefold purpose: (1) to organize unorganized workers; (2) to promote the interests of its members through legislative activity and publicity, and (3) to settle disputes among its members. The federation's annual autumn convention is its final seat of authority. Between conventions the federation is governed by an executive council made up of the president, secretary-treasurer, and 15 vice-presidents. It is financed by a *per capita* tax on members' unions, two cents each month for each member of national and international unions, and 35 cents a month for each member of directly affiliated local unions. The financial report of the federation, beginning Sept. 1, 1936, and ending Aug. 31, 1937, showed that the balance on hand, Aug. 31, 1936, was $569,405.99; the total receipts for the 12 months ending Aug. 31, 1937, were $1,184,478.99, and the total expenses for the same period were $1,167,317.57, leaving a balance on hand, Aug. 31, 1937, of $586,567.41. (E. F. McG.)

AMERICAN LITERATURE. The best-seller lists, from Maine to California, for most of the year, continued to be dominated by two books published in 1936; Margaret Mitchell's romantic story of the South in the Civil War, *Gone With the Wind*, and Dale Carnegie's *How to Win Friends and Influence People.* Neither attracted distinguished attention from the critics. Towards the close of the year Kenneth Roberts's high-spirited story *Northwest Passage* and Hendrik Van Loon's very personal history of *The Arts* took the lead.

Historical Romance.—The vogue of the historical romance continued unabated. A trend for documentation of research in this *genre* was apparent: a limited edition of *Northwest Passage* was printed in two volumes, the second containing documents to prove the historic authenticity of the story. Several other historical novels included bibliographic footnotes as proof of the veracity of these tales. Those who saw in the vogue a genuine reinvestigation of the backgrounds of American history were confirmed in their view by the success, not only of *Northwest Passage*, but of Ester Forbes's *Paradise*, a story of Englishmen and Indians when bayberries and sweet fern still grew beneath the pines on Boston's Beacon Hill; of Phil Stong's lusty epic of old Iowa, *Buckskin Breeches*; of Archie Binne's idyll of the Puget Sound country, *The Laurels Are Cut Down*; of Conrad Richter's singing story of that war of the 'nesters' against the cowmen which broke up the ranch empires of New Mexico, *Sea of Grass*, and of *Slogum House*, Mari Sandoz's lurid picture of cruelty as she knew it, less than half a century ago, on the raw Northwest Nebraska frontier. And in J. P. Marquand's *The Late George Apley* the conflicts of generations, races, and classes in old Boston was faced, without the literary texture of George Santayana's *Last Puritan*, but with a greater novelist's skill.

Fiction.—Perhaps the American novel of the year was John Steinbeck's cruel, compassionate little idyll of homeless men, *Of Mice and Men*, which gave evidence of a sense of composite form not always present in this novelist's work; it brought him also a national fame not attained by *Tortilla Flat* and *Pastures of Heaven*, which still seemed to some critics his best work. It also demonstrated the man's amazing and fecund versatility.

Ernest Hemingway's 1937 novel, *To Have and Have Not*, caused many critics to revise their opinion that he had written himself out. It had been many years in gestation; Hemingway, it was said, had written and rewritten it, and it turned out a curiously uneven and patched piece of work. The story of a Key West rum-runner who lost out, it seemed to begin as a conventional Hemingway hymn in praise of blood; it ended with a hint of a social gospel, which had hardly been established earlier in the tale. Hemingway had at last come home to America; and he was refusing to be the rich playboy of his later stories. A new seriousness had come into his work; and he still commanded the most powerful emotional rhythm in current American prose.

Another middle-aged writer of the 'hard-boiled' school, James M. Cain, who had shown an amazing command of the writer's technique in *The Postman Always Rings Twice*, proved again his ability to convey emotion in swift, hard prose, in *Serenade.* But the subject-matter of *Serenade* suggested that Mr. Cain was content to squander his amazing narrative talent on material of little meaning.

Two American writers who had already proved their mettle wrote remarkable novels on similar themes: Oliver LaFarge, whose *Laughing Boy* won the Pulitzer prize in 1929, in *The Enemy Gods*; and Edwin Corle, author of *Mojave*, in *People on the Earth.* Both novels dealt with the problem of the Navajo boy, trained in white schools, who wants to live with and serve his own desert people. Both catch the tragedy of past miseducation and the romantic hope that an ancient American civilization which has never died may find new vitality in the twentieth century.

Louis Bromfield's novel of India, *The Rains Came*, which was perhaps intended as a parable of the crisis of all Western civilization, hardly enhanced his reputation. William Saroyan's fourth volume of short stories, *Little Children*, revealed no new facets of his unique and genuine talent. Frederic Prokosch, whose *The Asiatics* was one of the memorable books of 1935, repeated that curious exercise in passionate nihilism in another eerie novel, *The Seven Who Fled*, but awakened doubts of the range of his talent. One of the books which most strikingly confirmed the promise of the earlier first novel was the work of a Negro novelist, Zora Hurston, whose *The Eyes Were Watching God* struck a rich, mellow note, telling a salty story of her own race.

First Novels.—Among 1937's crop of beginners, the the following, perhaps, stand out: Clyde Brion Davis, author of *The Anointed*, a witty and original novel of a slightly cracked seaman who was curious about God; William Maxwell, who, in *They Came Like Swallows*, painted an exquisite picture of a mother as seen through her young children's eyes; and Theodore Strauss, the young author of *Night at Bogwallow*, who struck a new note in lynching stories by introducing two white heroes whose fists felt 'like the hammer of God' as they fought to stop the blood-crazed mob.

Biography.—Easily the outstanding American biography of the year was Marquis James's *Andrew Jackson : Portrait of a President,* and not the least interesting page in that book was a footnote to the bibliography, in which Mr. James expounded his theory that if people read more fiction than biography, that was chiefly the fault of biographers who did not know how to write.

Vincent Sheean's *Personal History,* published in 1935, set a style ; and a host of his generation, which came of age at the very brink of the World War, have been telling their stories. This was the 'lost generation' which sought solace in Paris and on the Riviera; but the 1937 crop all sing the glories of returning to America. Orrick Johns, Missouri poet, in *Time of Our Lives* ; John Gould Fletcher, the imagist poet of Little Rook, Ark., and London, in *Life Is my Song* ; Evelyn Scott, novelist born in Clarkville, Tenn., in the *Background in Tennessee*—all discover new meaning in their native soil. Burton Rascoe, of Kentucky, Oklahoma, Chicago, and New York, stresses a similar motif in *Before I Forget*; and Thomas Benton, the Missouri painter, after painting his defiant mid-West rooster-creed on the walls of his native State's capital, put it into words in his roistering autobiography, *An Artist in America.*

A less philosophical, but significant, writer's biography was Henry Harrison Kroll's *I Was a Share-Cropper.* A new segment of America here found its first literary expression, but to many Americans it was more effectively introduced by a remarkable collaboration—*You Have Seen Their Faces*—in which Margaret Bourke-White, with her incomparable camera-art, illustrated the searing picture of share-cropper despair expressed in Erskine Caldwell's prose.

Publication of Catherine Drinker Bowen's *Beloved Friend* revealed in detail one of the strangest and most pathetic love stories in history: the thirteen-year intimacy between the Russian composer, Tschaikovsky, and Nadejda von Meck, the wealthy widow who, falling in love with Tschaikovsky's music, supported, consoled, and mothered him, wrote him almost daily letters, arranged his daily life, but never talked with him face to face.

There were good books in other categories. A unique contribution to the pre-history of China was Herrlee Clessner Creel's *The Birth of China* ; a unique picture of present-day China was Carl Crow's picture of the nation as seen through an advertising man's eyes, *Four Hundred Million Customers.* A new kind of nature writing appeared in Clifford Pope's soberly alluring *Snakes Alive,* and still another in Edwin Way Teal's story of backyard researches, *Grassroot Jungles.* A new step in American attitudes, of no little significance, was taken when the surgeon-general, Dr. Thomas Parran, published his frank *Shadow on the Land : Syphilis* ; and a new iconoclastic analysis of traditional American symbols found expression in a brilliant and witty book by a Yale law professor, Thurman Arnold's *Folklore of Capitalism.*

It is not an age of great poetry ; even Edna St. Vincent Millay's *Conversation at Midnight* did not enhance her great reputation. For despite some lyric lines of a loveliness unmatched by any of her contemporaries, the burden of the conflicting philosophies which Miss Millay sought to express in variant verse was often too heavy a strain for her medium.

Everett Dick's *Sodhouse Frontier* was one of the most original contributions of the year to American history, bringing back to life the beginnings of settlement on the treeless prairies, necessarily a totally different form of life from that familiar in the forested East. Variant points of view on the old South came to light in instalments of two large works on early American history. William E. Dodd's *The Old South : Struggles for Democracy,* finding there new patterns of political life, and the third volume of Charles McLean Andrews' *Colonial Period of American History,* which saw in America little but reflection of England's struggles. But the most original work of American history of the year was, nominally, not original at all. It was Henry Beston's *American Memory,* a tapestry of impressions of America—from John Smith and William Bradford to Dr. Walter Reed and Henry Adams—so skilfully interwoven, so deftly stitched together with Mr. Beston's love of American soil and his awareness of the Indian heritage, that the whole becomes an original work of art.

A new form of depression literature began to filter into print in 1937 : the first volumes of the great *American Guide,* the major enterprise of the Federal writers' project of the WPA, began to appear. A few politicians squirmed at the frankness of *Massachusetts* and *Vermont* ; but the people of the States were delighted. *Idaho* was the finest of the early State volumes ; but the one signed work in the series, Jeremiah Digges's *Cape Cod Pilot : A Loquacious Guide,* was the wonder-child of the project. For with the inspiration of this rare book it seemed possible that other volumes in the ambitious series might climb out of the Baedeker class into national literature.

AMERICA'S CUP: *see* YACHTING.

AMES, WINTHROP. American theatrical producer ; born in North Easton, Mass, Nov. 25, 1871 ; died in Boston, Mass., Nov. 3, 1937. A biographical note is to be found in the *Ency. Brit.,* vol. 1, p. 807. His later productions included *The Green Goddess* and *Old English,* which established George Arliss as a star, and the successful Kaufman-Connelly fantasy, *Beggar on Horseback.*

ANAEMIA. During 1937, the following advances have been made in our knowledge of anaemia : further confirmation has been developed of an interaction between a gastric (intrinsic) factor and a food (extrinsic) factor, normally preventing the development of pernicious anaemia. Resemblances have been shown between the conditions essential for clinical activity of the gastric factor and a proteolytic agent (not pepsin) acting *in vitro* on casein.

The effect of liver extract in stimulating formation of red blood cells may be exerted by an augmentative action of three chemically distinct accessory factors upon a primary factor. Dogs fed on certain deficient diets and aminopyrine or indole develop severe anaemia curable by yeast autolysate or liver extract. Macrocytic anaemia is produced in pregnant women by a diet deficient in the vitamin B complex.

New evidence is given that the hypophysis probably is essential for normal blood formation, and an attempt has been made to define and label the approximate potency of liver and stomach preparations in terms of units. Some evidence is given that considerably more iron is retained following oral administration than can be accounted for by increase in haemoglobin concentration. The importance of growth, blood loss, and controlled absorption of iron in the causation of iron deficiency anaemia is emphasized. New light is shed on the mechanism of iron transportation, with reports of prompt increases of iron in the plasma following its oral administration. (G. R. M.)

ANAESTHETICS. During recent years the practice of anaesthetics has undergone much change. The most noticeable difference, perhaps, between the old and the new methods is to be seen in the multiplication and the complicity of the machines used for administration of inhaled anaesthetic gases. This process has been mechanized as extensively as has the British army itself. The mask and drop bottle which formerly provided for the inhalation of the vapours of ether and chloroform have given way to elaborate apparatus contrived in America and Great Britain, the McKesson machine, the Heidbrink, Foregger, Boyle, Magill, and the rest. Machinery not only delivers and registers the anaesthetic, but mechanical devices also record the blood pressure, pulse, and respiration of the patient, so that a caricaturist has, not without justification, represented the anaesthetist of the future as a person in dungarees, outside the operating theatre, working a series of switches and noting on dials the changes which he is bringing about in his patient, who is connected up with the machine by a number of rubber tubes.

All this fertility of invention of apparatus has not, of course, been merely the expression of mechanical ingenuity. It has been exercised in answer to the demand for effective means of employing gaseous anaesthetics which are less harmful than ether and chloroform, and which cannot be given by the old simple means. These gases must be stored in metal cylinders furnished with accurate valves, and the apparatus through which they are delivered must control pressure and exact graduation of vapour strength. The gases referred to are nitrous oxide, cyclopropane, and ethylene, and the machines from which they are used also deliver oxygen always, and generally carbon dioxide.

Nitrous oxide (laughing gas) has certainly been in use for generations, but it is only modern apparatus which has brought it into the field of anaesthesia for major operations. The older machines confined the use of nitrous oxide to short operations and dentistry.

The other two gases mentioned have only of recent years become available for the practising anaesthetist. Cyclopropane, which is anaesthetically as potent as chloroform, has the virtue that it is effective when given diluted with large quantities of oxygen, and for this reason it is invaluable during those severe operations within the chest—removal of the lobe of a lung for example—which have become possible only with the aid of modern anaesthetic technique. Both cyclopropane and ethylene are explosive, and special precautions have to be taken against this danger, either by efficient earthing of the machine or by due provision of moisture, for explosion has usually resulted from an electric spark, generated either statically or through a faulty electric connexion.

Another device besides appropriate apparatus has rendered effective the use of nitrous oxide for long and severe operations. This is what is known as 'basal narcosis', and means the giving, at various times before the anaesthetic itself, of a sedative or hypnotic drug, which will reinforce the action of the gas.

This practice has two advantages: it enables a nervous patient to be put quietly to sleep, or at least rendered indifferent, while still in bed, and it permits the operation to be carried out under the influence of the comparatively innocuous gaseous anaesthetics which cannot unaided produce the necessary relaxation of muscle required by the surgeon during considerable periods of time. In many instances this premedication is something more than a mere comfort to the patient. For the subject of exophthalmic goitre, for example, who has to undergo removal of the thyroid gland, basal narcosis greatly reduces the risk of operation by counteracting the nervous mental attitude which in these patients has often led to disaster.

The chief drugs used to produce basal narcosis are avertin, paraldehyde, and the barbiturates nembutal, evipan, pentothal and others. The first two are administered per rectum, nembutal can be given either by the mouth or into a vein, and the last two mentioned are always given into a vein. Besides these, the drugs used for 'twilight sleep', morphine and scopolamine, are often given hypodermically before the administration of an anaesthetic.

A further addition to apparatus must be mentioned, as it is essential for the use of cyclopropane and is of great service with the other gases. This is the inclusion of soda lime in the circuit, for the absorption of the expired carbonic acid gas. It renders possible the breathing over and over again of the cyclopropane or other gas being used as the anaesthetic. Not only does this enormously diminish the amount of anaesthetic gas used during a long operation, but the method gives the anaesthetist complete control of the respiratory activity of his patient. Sometimes it helps the surgeon to reduce this till the patient scarcely carries out any breathing movements at all. Such a condition is safely instituted when the carbonic acid gas absorption method is in use. The other important modern method which must be mentioned is the endotracheal, by means of which the anaesthetic vapour is delivered into a soft tube which has been passed through the larynx down the windpipe. This method has removed much of the danger associated with operations on the tongue and throat, during which blood was apt to enter the air-passages and endanger life through suffocation. (J. Bd.)

ANCIENT MONUMENTS. The preservation of ancient monuments and historic buildings in Great Britain is largely undertaken by His Majesty's Office of Works.

Work done in 1937 on prehistoric monuments included Grime's Caves, an extensive Stone Age flint mine in Norfolk. Dr. Mortimer Wheeler made important discoveries while excavating Maiden Castle, Dorset. The Office of Works set up fallen stones of the circles known as 'The Hurlers', Cornwall, and excavated early sites in the Orkneys. With the National Trust (*q.v.*) the Office of Works prepared a scheme for the preservation of the Avebury monuments and their surroundings. Efforts are being made to raise the necessary money. The monuments consist of a great earthen circle with stone circles and a great avenue of stones going down to West Kennett. The owner, Mr. Alexander Keiller, is setting up fallen stones in the avenue.

Work on Roman remains continued at Corstopitum, the Corbridge Roman station in Northumberland; Richborough Castle in Kent; Porchester Castle; and Silchester in Hampshire.

At Thetford Priory, remarkable fragments of sculpture and a renaissance tomb were discovered. Preservation and excavation work continued at Castle Acre and Binham Priories in Norfolk; Rievaulx Abbey, Yorkshire; Lanercost Priory, Cumberland; and Glenluce, Arbroath, and Jedburgh Abbeys in Scotland.

Secular buildings cared for included Tintagel, Goodrich, and Ashby-de-la-Zouche Castles; Peveril Castle in Derbyshire; Tretower Court, Brecknockshire; Minster Lovell, Oxfordshire; Houghton House, believed to be Bunyan's 'House Beautiful'; Kirby Hall, Northamptonshire; the Scottish palaces of Linlithgow and Culross; the Bishop's Palace at St. David's; and the Queen's House, Greenwich, where additions made by various occupiers were removed and the old outlines of the house restored. The gardens of Edzell Castle, Scotland, are being laid out in appropriate style.

The work of the Council for the Preservation of Rural England included finding alternative sites to beauty-spots threatened by the Defence Departments; and coastal preservation and the promotion of National Parks. (V. R.)

ANDAMAN AND NICOBAR ISLANDS. These islands, a province of British India, form the summits of a submarine range connecting Burma with Sumatra. The Andaman group has a land area of 2,508sq.m.; and the Nicobar group, of 635sq.m. The population of the islands is 29,463. The indigenes are among the most primitive people in the world, and the islands are occupied only for the Indian penal settlement at Port Blair in the Andamans. Transportation for crime has now ceased, and the Andamans are being developed as a free colony. In 1937 there took place for the first time in the settlement a hunger-strike, as a protest against the political situation in India.

ANDORRA. Andorra has experienced certain repercussions of events which have taken place in Spain near the territory of Andorra. Economic difficulties have been surmounted, thanks to the road communications between Andorra and France. Safety has been assured by the force of French police which has been in Andorra since Sept. 1936 to protect the Andorrans entrusted to them by the Chief of the French State, co-Prince of Andorra.

On Oct. 27 and 28 very serious floods ravaged Andorra. With help, both financial and technical, from France, measures were undertaken to restore communications.

ANGELI, DIEGO, Italian author and critic; died in Rome, Jan. 23, 1937, aged 67. His greatest work was the translation of Shakespeare into Italian, which he completed in 37 volumes in 1910.

ANGLICAN COMMUNION, THE. Within the communion of the Church of England in the British Isles are:

The Church in Wales, comprising six dioceses with 1,750 churches, 194,085 Easter communicants (a decline of 1,659 on 1936 figures), and 138,286 Sunday School children (a drop of 9,189).

The Church of Ireland, which received by its representative body contributions from voluntary sources during the year amounting to £190,712. The 25th General Synod was held in Dublin in May.

The Episcopal Church of Scotland, with 127,151 permanent members, 60,333 communicants, and 347 clergy. The Annual Meeting of the Representative Church Council (corresponding roughly to the Anglican Church Assembly) was held in April. It has a declared aim in providing a minimum stipend of £300 per annum and a free house for every rector of an incumbency and priest-in-charge of an independent mission, and has reached the point of £284 per annum with house. Diocesan Youth Conferences were held in Edinburgh and Glasgow.

The Church of England Overseas.—The jubilee of the Bishopric in Jerusalem was celebrated in June, and in October that of the Chinese and Japanese Churches. The ninth triennial meeting of the General Synod of the Chinese Church was held at Foochow. In Japan, an evangelical campaign was undertaken throughout the dioceses and mission districts.

In 1937, the Church of England Council of Empire Settlement was dissolved and was succeeded by the Church of England Advisory Council of Empire Settlement, with the Earl of Bessborough as chairman, whilst a £200,000 scheme was put forward for a cathedral at Wellington, the capital of New Zealand. There are now 248 overseas dioceses in the Church of England Communion, and, in three dioceses of South India, of 312 clergy, 287 are Indians and 25 Europeans. In Africa two-thirds of the 600 clergy are African. *See* also PROTESTANT EPISCOPAL CHURCH.

ANGLING. Anglers in Great Britain did not have a very happy year in 1937. There was considerable improvement in the later months of the year, but during the dry summer, rivers were generally low and heavily weeded up.

The All England Championship, held in September in the Gloucester and Berkeley Canal, was won by the Groves and Witnall Association of Salford, with a total catch of 23lb. 15oz. 1 dram. The biggest individual catch of the competition was the 9lb. 9oz. of Mr. H. Jones.

A scarcity of free rivers, which raises difficulty for unattached anglers following the sport under satisfactory conditions, has led to the increase in membership of angling associations, which is now about half a million. The London association has liquid assets of over £4,000.

The salt-water season was also somewhat disappointing in results, but two new records were made, and one former record was equalled. The outstanding achievement was the landing, by A. Davey, fishing at Hastings, of a male tope weighing 49lb. 9oz., which beat the previous best of this species by over 4½lb. The record for flounder was narrowly beaten by W. Hunt, fishing at Fowey; while Sir Edward Mountain equalled the previous best with a bull huss (dog fish), caught at Weymouth Bay, weighing 18lb. The best tunny catch of the year—weighing 707lb.—was made at Scarborough by W. F. Henn.

Records for ocean fish caught by sportsmen in America in 1937, according to *Yachting*, include the following: tunny, 821lb., time 4½hrs., caught by John S. Martin of New York off Liverpool, Nova Scotia, and 33lb. heavier than the

Victor Hey]

MRS. K. SUTCLIFFE WITH HER 644-LB. TUNNY CAUGHT OFF SCARBOROUGH ON AUGUST 26, 1937 previous North American record. Tunny, 759lb., caught by Mrs. Earl Potter of Brookville, Long Island, and 760lb., caught by Mrs. William Chisholm of Cleveland, Ohio, both in Nova Scotia waters. Blue marlin, 608lb., caught by Gilbert Easton; 580 and 508 lb., caught by Hugh Rutherford; 460lb., caught by Mrs. Michael Lerner, all off Cat Cay and Bimini. Wahoo, 91lb., caught by Harry J. Tucker off Bermuda, the Atlantic record and five pounds heavier than the previous record of 1911. Curved yellow tuna, 265lb., caught off Honolulu by James W. Harvey. The world's record rooster fish, 72lb., is reported to have been caught at Panama.

ANGLO-EGYPTIAN SUDAN. The year 1937 was an interesting one for the Anglo-Egyptian Sudan. The reorganized provincial administration came into force. In lieu of the 13 provinces, into which the country had been divided since the earliest days, there are now only eight provinces, *viz.* the Northern province, which includes all the country north of Khartoum, previously divided into the Wadi Halfa, Dongola, and Berber provinces; Khartoum; Kassala, which includes the Red Sea littoral; Blue Nile, which includes the Ghezira and the old Fung and White Nile provinces (the latter is still a sub-province); Kordofan, with which is joined the Nuba Mountains; Darfur; Upper Nile; and the Equatorial province, which includes the old Bahr-el-Ghazal and Mongalla provinces. The absorption of White Nile sub-province with Blue Nile will take place in 1938. Greater efficiency and economy are expected to result from this regrouping.

In accordance with the terms of the Anglo-Egyptian treaty of alliance signed in London on Aug. 26, 1936, which provided that British and Egyptian troops are to be placed at the disposal of the governor-general for the defence of the Sudan (in addition to the Sudan Defence Force), the 7th Battalion of Egyptian Infantry was transferred from Egypt to the Sudan, where it arrived on Dec. 29, and was posted to Port Sudan, with two Companies in Khartoum.

The governor-general appointed for the first time an Egyptian officer to his personal staff, as military secretary, and an agreement was come to regulating the indebtedness of the Sudan and the mode of settlement to Egypt for advances made for development purposes since the Occupation.

The year was one of peace and prosperity, good rains, and excellent crops. Particularly was it marked by a record cotton crop in the Ghezira, which reached 890,907 kantars, as compared with the previous best of 805,051 kantars. For the first time auctions were held at Port Sudan in addition to Liverpool.

Government finances were good. Revenue up to Dec. 31 amounted to £E.4,769,263, which is £E.306,954 in excess of the revenue in 1936.

Trade was brisk, and up to Nov. 30 the figures were: imports £E.5,558,438; exports £E.7,838,723; compared with £E.4,822,977 and £E.5,104,013 respectively. The condominium supplies most of the world's gum arabic.

On the occasion of King George VI's coronation, a party representative of all classes of the Sudan population visited England. This was followed later in the year by several other similar parties. (A. Mn.)

ANGOLA (Portuguese West Africa) is a Portuguese colony extending S. from the mouth of the Congo to C.Frio, 18° S. lat., and E. to the Belgian Congo and Northern Rhodesia. The governor-general, Colonel António Lopes Mateus, resides at Luanda. The area is 487,790sq.m., and the pop. *c.* 3,225,000, of whom *c.* 59,000 are Europeans. The new capital is to be Nova Lisbõa.

Lobito Bay is an important harbour, taking a share of the trade of Belgian Congo and Northern Rhodesia, for which it is the nearest outlet to the sea. The Benguela Railway serves these territories, and Lobito Bay is connected by rail via Katanga and Rhodesia with Beira in Portuguese East Africa.

Imports and exports for 1936 were valued at £1,340,874 and £2,799,141 respectively, and the 1937 budget was estimated to balance at £1,943,950. The unit of currency is the angolar (equivalent to the Portuguese escudo) of 100 centavos. The main part of the revenue is supplied by shipping and railway dues. A scheme is in development for settling colonists on farms of not less than about 1,000 acres. The principal products are sugar, coffee, palm oil, cotton, wheat, and maize; and an unusual African export is dried and preserved fish.

In Jan. 1937 negotiations were said to be in progress between Germany and Portugal with a view to affording the former country opportunities for economic expansion in Angola, including the exploitation of mines and constructional work by German iron and steel and chemical firms.

ANIMAL DISEASES: *see* Veterinary Science.

ANNAM: *see* French Indo-China.

ANTARCTICA. The last decade has been one of notable achievements in our knowledge of Antarctica; vast amounts of new data have been amassed, and only a fraction of the results of the many expeditions that have been in the field has yet been worked up and digested. It is here possible, therefore, only to sketch in roughly the more notable changes in our conceptions of the physical features of Antarctica.

Perhaps the most striking advance has been the discovery of a vast plateau filling the region between King Edward VII Land and Graham Land and the addition of several sizable mountain groups in this area to the map. Notable among these are the Edsel Ford range (Byrd's first and second expeditions); the Eternity range and the Sentinel range (Ellsworth's flight). The plateau appears to run from King Edward VII Land to the Queen Maud range, thus precluding the possibility of a strait dividing Antarctica into two parts, as hypothecated by some geographers. The tracing of the boundary between this land mass and the Ross Shelf ice has also delimited the eastern shore of the Ross Sea.

Another significant geographical achievement has been the demonstration by aerial mapping (Ellsworth) and surface observations (British Graham Land expedition) that Graham Land, formerly considered an island, is an integral part of the Antarctic continent.

Almost equally striking is the strong indication from aerial pictures (Ellsworth) and the observation of a surface sledging party (British Graham Land expedition) that Alexander Island is a part of the continent, with a large fiord separating it from Graham Land.

From the air the Queen Maud mountains were observed to extend several hundred miles farther to the east than previous observation had shown. This new extension received the name Horlick Mountains (Byrd's second expedition).

Much new light has also been shed on the geological structure of the continent. A new cross-section of the Queen Maud mountains up Thorne Glacier has demonstrated the existence here of the so-called Beacon sandstone coal-bearing sedimentary strata. In this area the ice cap was also found to be overriding the mountains more extensively than in the western part of the range (Byrd's second expedition).

A preliminary geological reconnaissance of the Edsel Ford range indicates that it consists largely of greatly folded metamorphosed sediments intruded by masses of igneous rocks of batholithic proportions. These intrusives are high in sodium and potassium, and consist mainly of leucogranodiorites and granodiorites. From the meagre data so far studied, it appears that a great series of arkosic sandstones and shales laid down on a pre-Cambrian basement complex was closely folded and subsequently deeply intruded by acid magma. Following this, there ensued a long period of erosion, glaciation, and the extrusion of olivine basalt in the Pleistocene period (Byrd's second expedition).

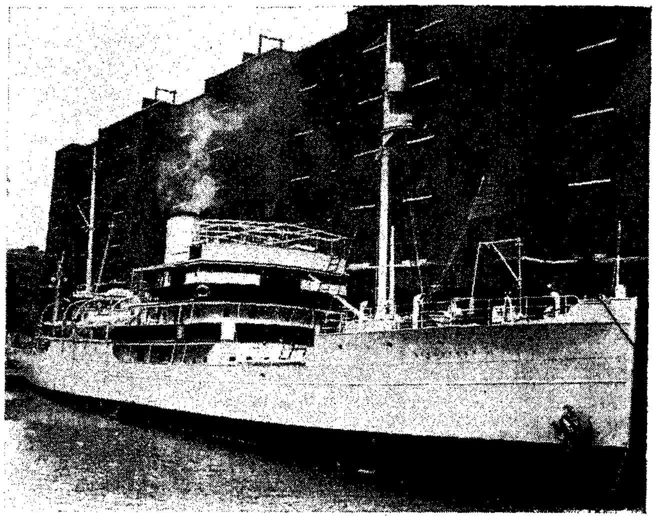
It is still premature to make any positive statement; but there is reason to believe that the Edsel Ford range is one of the blind ends of the virgated Andean mountain structure, continued through Graham Land and then westward, and that the intrusives in the Edsel Ford range are differentiates high in sodic and potassic contents of the same magma that was intruded in the more easterly sections of the system.

The application of seismic sounding techniques has shed new light on the thickness of the Ross Shelf ice and the ice cap covering the plateau in the Pacific quadrant of the continent. Much of the floating part of the Ross Shelf ice was found to be over 600ft. thick, and some 1,500ft. On the new plateau, ice thicknesses up to 2,200ft. were measured. The existence of numerous shoals and at least one island above sea level was also ascertained. These furnish a retaining structure for the Shelf ice, and go far towards explaining the persistence of many of its features, such as the Bay of Whales (Byrd's second expedition). A new survey of the sea front of the Shelf ice showed that between 1912 and 1935 it had advanced northward an average of 12 nautical miles (13·8 statute miles) along the whole front between Ross Island and the bay of Whales (Byrd's second expedition).

The coast-line of the Australian and African quadrants has now been largely filled in (Mawson, *Discovery II*, Norwegian whalers). In place of the great blanks which were the most conspicuous feature on the maps of this region a decade ago, there are now only a few scattered reaches of small extent still marked 'unexplored'. Several ranges of mountains have been discovered here and there, and one in Princess Ragnhild Land is of great size. It appeared from the air to extend for several hundred miles parallel to the shore about 140m. inland, and to reach an altitude of 10,000ft. (Lars Christensen). *See* also Antarctic Exploration; Exploration and Discovery.

(R.E.B.; K.L.R.)

ANTARCTIC EXPLORATION. The ships *Discovery II* and *William Scoresby*, of the British Discovery Committee, were engaged almost continuously in oceanographic work in Antarctic waters during 1936 and 1937. Interrupting this work, the *Discovery II* joined the search for Lincoln Ellsworth and his pilot, Herbert Hollick-Kenyon, and on Jan. 15, 1936, found them safe at Little America, after a trans-Antarctic flight of some 2,200 miles from Dundee Island, which revealed the topography of a wide strip of hitherto unknown territory. Among their important discoveries were the non-existence of Stefansson Strait except as an ice-filled inlet; a range of mountains (named Eternity Range by Ellsworth) south of this inlet rising from 7,000 to 12,000ft. and apparently continuing south-eastward the axis of the mountains of Graham Land; and a solitary range (named Sentinel Range) rising to an estimated 13,000ft. from the great ice-covered, 6,000–7,000-ft. plateau at about longitude 88° W., between parallels 60° and 65° S. The segment between the 80th and 120th meridian was claimed for the United States, and named James W. Ellsworth Land, after the explorer's father. From aerial photographs taken on the flight, topographical maps covering some 12,000 square miles were constructed.



Keystone]

THE DISCOVERY II. THE SHIP WAS SPECIALLY BUILT FOR OCEANOGRAPHICAL RESEARCH.

With Ellsworth on board, the *Discovery II* reached Melbourne on Feb. 16. *En route* the Balleny Islands were surveyed, Row Island was determined as non-existent, and the height of Young Island fixed at 3,000ft. instead of 12,000ft., as reported by Balleny in 1839. Leaving Melbourne on March 4, the *Discovery II* continued her voyage. During Jan. and Feb. 1937 surveys of the South Shetland and South Orkney Islands were made. The ship again left England on Oct. 2, 1937, for a 20-months circumpolar cruise.

Important explorations on the Antarctic continent were concluded by the British Graham Land expedition (1934–37), led by John R. Rymill. From a base established in Feb. 1936, in the newly named Debs Islands (lat. 68° 10′ S., long. 65° 52′ W.), reconnaissance aeroplane flights were made, revealing new coasts, mountains, and glaciers. Some 250 miles of complicated coastline were surveyed, and surveys also were made along the west coast of Graham Land and along a 15-mile-wide strait some 200 miles long, separating Graham Land from Alexander I Island. Surveys of over 450 miles of coast southward from Matha Bay revealed that no channels cut Graham Land as previously indicated by Wilkins. Another party surveyed across Graham Land in lat. 69° 50′ S., and mapped 140 miles of the east coast. The results of the two years' work will be a major contribution to knowledge of the Antarctic.

In the African quadrant, Lars Christensen headed his fourth Antarctic expedition, leaving Capetown in the ship *Thorshavn* on Dec. 28, 1936. On Feb. 4, 1937, new land was discovered from the air between Princess Ragnhild Land and Queen Maud Land, in lat. 69° 30′ S., long. 34° to 40° E., and named Prince Harald Land. A flight on Feb. 6 disclosed a 10,000–13,000-ft. mountain range extending 200 miles westward from lat. 71° 31′ S., long. 20° E. Many aerial photographs were taken, covering 30,000 square miles of territory, and including 1,200 miles of coast.

(L. El.)

ANTHROPOLOGY. Anthropology, the science of race and culture, has recently gained in general interest and academic recognition largely through the effervescence of racial doctrines, the reopening of colonial issues, and events connected with the westernization of China and Egypt, India and Japan. In Europe the widening rift between democracies and dictatorships is forcing us to rethink and redefine such concepts as 'progress' and 'cultural efficiency', 'development' and 'morality', 'law', 'religion', and 'value', on a broad, comparative, that is anthropological, basis. In all this, anthropology has itself been also forced to consolidate its spheres of activity and influence, to clarify its concepts, and to define its methods and aims. The older, more ambitious schemes, such as the discovery of origins, stages, and historical connexions, demand, it is felt, a fuller understanding of what culture really is.

The first task of scientific anthropology must consist in the analysis of culture and cultural process. The demographic, economic, legal, and educational aspects of primitive communities have now become the main subject-matter of anthropology, in lieu of the livelier and more exotic phenomena, such as cannibalism, head-hunting, the couvade, and strange taboos. The nature of human marriage and family, of the State and of kinship organization, of faith, ritual, and ethics, must be fully understood before we take up questions of how they came into being, developed, and diffused. Field-work and theory are carried on by most students as complementary and concurrent types of research. Practical applications are being recognized as essential to sound academic work. At the same time, anthropology is receiving gradual recognition from statesmen and administrators. 'That a knowledge of anthropology can be of great use to those engaged in diplomacy and administration, I firmly believe', says Lord Onslow in his presidential address to the First International Congress of Anthropological and Ethnological Studies (London, 1934). 'Anyone who is called upon to govern an alien race . . . must try to appreciate and sympathize with their points of view, and . . . acquire an adequate knowledge of their civilization, language, religion, and customs, especially the system of land tenure, marriage, and inheritances of rank . . .' (*Compte-Rendu de la Première Session*, 1934, p. 15).

As regards academic recognition, a new Chair of Social Anthropology was established in 1937 at Oxford (A. R. Radcliffe-Brown), following the first professorship, founded in the University of London 10 years ago (B. Malinowski, 1927); that of Cambridge, where T. C. Hodson was succeeded by J. H. Hutton in 1937; and the Chair in Geography and Anthropology, University College of Wales, Aberystwyth, filled by C. Daryll Forde. Two other teaching posts were instituted in 1937: a Lectureship in Cultural Anthropology at Aberdeen (R. Piddington), and one in Native Administration at Capetown (H. J. Simons). At the Witwatersrand University, Johannesburg, Dr. A. I. Richards, of the London School of Economics, has been appointed Senior Lecturer (1937), herself succeeded by Dr. Margaret Read.

Thus, in British universities and in the Colonies (Sydney, Capetown, Johannesburg, Toronto, Montreal, and Ottawa), research and teaching in anthropology are carried on by scholars experienced in field-work and theory alike, and largely interested in its practical applications. The International Institute of African Languages and Cultures, with its headquarters in London, stands for the study of practical anthropology based on scientific field-work, with special emphasis of the 'anthropology of the changing African'. The African Survey now under way, under the direction of Lord Hailey, promises to give an authoritative statement on the place of anthropology in our scientific knowledge of Africa. In that continent, a new institute of research has been created at Livingstone, N. Rhodesia (Director, Godfrey Wilson, 1937); while the Sudan government has appointed Dr. S. F. Nadel to carry on scientific field-work among the pagan tribes.

Among the important literary events in British anthropology must be singled out the appearance, in 1936, of *Aftermath*, a supplementary volume to *The Golden Bough*, and, in 1937, of *Totemica*, an additional collection of evidence bringing up to date Sir James Frazer's researches on this subject. The volumes testify to the vitality both of the author and of the British school of anthropology.

France.—In France, the Institut d'Ethnologie at Paris (directed by MM. Lévy-Bruhl, P. Rivet, M. Mauss, and R. Maunier) has organized a number of field research expeditions to Africa, Indonesia, and America, and carries on the publication of valuable monographs, to mention only those of H. Labouret, M. Leenhardt, M. Griaule, and J. Soustelle. Last summer, several International Congresses were held in Paris: 'Sciences Sociales' (July 5 and 6); 'Population' (July 29–Aug. 2); 'Folklore' (Aug. 23–28); 'Recherche Scientifique d'Outre-Mer' (Sept. 20–26); 'Évolution Culturelle des Peuples Coloniaux' (Sept. 26–28). Members of the French School, in its origins largely influenced by anthropological research—Durkheim's work was determined by his ethnographic interests—were able to exchange ideas with their foreign colleagues, and show the advance made by French anthropology and sociology towards the empirical point of view. The Congress of Folklore resolved to join forces with the International Association for European Ethnology and Folklore—organized and inspired by Scandinavian scholars (H. Geijer, Sigurd Erixon, Åke Campbell, W. Thalbitzer, and K. Liestøl)—in the study of the material culture, the beliefs, and sociological phenomena among the uneducated and backward strata of European countries.

Scandinavia.—In Scandinavia, in addition to the intensive study of Nordic folklore, general ethnographic work is being carried out, in Sweden by G. Lindblom, W. Kaudern, and other pupils of the late A. E. Nordenskiöld; in Denmark, where K. Birket-Smith is continuing the work of W. Thalbitzer and K. Rasmussen; and in Norway, where the *Institut for Sammenlignende Kulturforskning* is arranging and publishing lectures on the comparative study of cultures, in which Norwegian and foreign scholars, among the latter F. Boas, M. Mauss, M. Granet, and B. Malinowski, have taken part.

In **Holland** and her colonies, practical anthropology as well as scientific field-work is being carried on steadily through the work of the Colonial Institute at Amsterdam and the Department of Ethnology at Leyden. In 1937 Prof. J. P. B. de Josselin de Jong published the first volume of his studies in Indonesian culture, the result of field-work over an extended area in the Dutch Indies.

In **Belgium,** the work in anthropology centres upon the colonial problems of the Congo; it is connected with the work of the Museum at Tervueren and the *Institut Royal Colonial Belge*, and is published in the periodicals of these institutions, and in *Kongo-Overzee*.

U.S.A.—In the United States, Dr. R. Linton has succeeded Prof. Boas at Columbia (1937), where the new department (R. Benedict, R. Linton, D. Strong) is composed of workers primarily interested in cultural anthropology. The dominant trend in that country, however, still remains historical. Prof. Kroeber has recently been sponsoring statistical developments of the *Kulturkreislehre*, following the earlier work by Prof. Jan Czekanowski of Lwów (Poland), and his pupil, S. Klimek. A new theoretical point of view in cultural anthropology has recently been developed in the school of Prof. F. Boas, led mainly by Dr. R. Benedict, Mr. Gregory Bateson, and Miss M. Mead. Their theoretical approach, that the ' spirit ' or ' genius ' of each individual culture has to be studied through some sort of intuitive empathy rather than through strictly scientific analysis, is best formulated in R. Benedict's *Patterns of Culture*, 1935. On this issue it differs from the approach advocated by the functional school of B. Malinowski (*see Human Affairs*, article by B. Malinowski, 1937), and the structural approach of A. Radcliffe-Brown.

Among the new text-books representing the American point of view must also be mentioned *Anthropology*, by A. A. Goldenweiser (1937), and R. Linton's *The Study of Man*. Two articles, by A. L. Kroeber, ' History and Science in Anthropology ' (in *The American Anthropologist*, 1935), and A. Lesser, ' Functionalism in Social Anthropology ' (*ibid.*), also give a good idea of present-day methodological and theoretical currents in American anthropology.

Germany.—It would be incorrect to assume that German anthropology is now working altogether under the influence of the official doctrines of Nordic superiority in race and culture. *Zeitschrift für Rassenkunde*, edited by E. Freiherr von Eickstedt, probably still the best journal on physical anthropology and racial problems, is notably free from questionable or tendencious articles. The new text-books: *Lehrbuch der Völkerkunde* (edited by K. T. Preuss, with contributions by Thurnwald, Preuss, L. Adam, and Westermann); Prof. R. Thurnwald's *Die Menschliche Gesellschaft* in five volumes; and Pater W. Schmidt's *Handbuch der Methode der Kulturhistorischem Ethnologie*, the two last mentioned published in 1937, are scientific statements of anthropological problems, unaffected by any racial or nationalistic ideas.

To the critical study of the more extreme types of racialism is devoted the periodical, *Races et Racisme*, published by a research group of the same name in Paris, and supplying information on political manifestations, legal decisions, and newspaper utterances, made in the name of racial doctrine and prejudice.

Physical anthropology has not yet given its final verdict, even on the question as to whether the concept of ' race ' is scientifically valid. ' It may be doubted whether the term " pure race " carries with it any meaning whatsoever . . .', writes J. C. Trevor (*Science and Society*, 1937, vol. I, No. 4), summing up the views of J. M. Morant (article in *Zeitschrift für Rassenkunde*, vol. II, 1935), A. C. Haddon and J. S. Huxley, *We Europeans* (1935), and most of the American anthropologists (F. Boas, T. Wingate Todd, E. S. Hooton, M. J. Herskovits), whose experimental work has largely invalidated the concept of ' stability of race ', as well as its genuinely genetic character. Prof. R. Ruggles-Gates, on the other hand, maintains the view that ' living man represents three or more species ' (*Man*, 1936, No. 218, and 1937, No. 32). This view has the support of Sir Arthur Keith and the majority of competent German anthropologists. Even less consensus of opinion exists as to the possibility of predicting mental characters and cultural capacities from physical data. Prof. H. J. Fleure, in his Huxley Memorial Lecture, 1937, sums up the position adequately in saying that ' . . . nearly all [students of anthropology] feel that there is some linkage between physical characteristics observable as such and mental features, but attempts to study this scientifically are still in their infancy ' (*loc. cit.*, p. 20). Interesting summaries of arguments and controversy will be found in Cedric Dover's *Half-Caste* (1937), and *Race Differences* (1935), by Otto Klineberg.

The very prominence given to ' race ' and racial differences has forced the anthropologist to admit how little is really known about ' race ' and ' racial purity ' ; the stability of racial characters, and above all, the correlation between the form of the human organism and cultural capacity. We are coming to realize that no amount of study of what man looks like can help us to predict how he will behave and what he is able to achieve. The somatically defined concept of race will no doubt provide us with convenient labels to classify human-kind into a number of groups. The cultural achievement of each group, however, has to be studied by direct observation on their organized behaviour, personal and social, economic, legal, magico-religious, and technical.

Cultural anthropology therefore still remains the core and clearing-house of all comparative studies concerning man and his achievements. Here, among all the schools, we find increasing appreciation of the principle that all reconstructions, evolutionary and historical, psychoanalytical and diffusionist, must be based on sound material, the precise use of clear concepts, and an analysis of facts collected under the guidance of relevant problems. Recent accounts of field-work show a growing interpenetration of empirical theory and observation.

Besides the field-work of French writers previously mentioned, we have to note some excellent work done in Australia: Lloyd Warner, *Black Civilization* (1937); and articles by P. M. Kaberry, W. E. H. Stanner, L. P. Elkin, U. McConnell, and R. Piddington, in the last few volumes of *Oceania*, which also contain articles by H. I. Hogbin, C. H. Wedgewood, and W. C. Groves, referring to Pacific regions. In Germany, one or two expeditions to Africa and Indonesia have been undertaken from Leo Frobenius's Institute at Frankfurt, of which the volume, *Im Lande des Gada* (1936), by Ad. E. Jensen, has already appeared. Good field-work is being done under the auspices of the Viennese School, notably by W. Koppers and M. Gusinde, P. Schebesta, and quite recently by C. von Fürer-Haimendorf (*see* last volume of *Anthropos*).

Of books published in England we may mention: *Azande Magic*, by E. E. Evans-Pritchard (1937); R. Firth's *We the Tikopia* (1936); and B. Malinowski's *Coral Gardens and their Magic* (1935). The latter is also devoted to an analysis of method in field-work, especially in the collecting and handling of linguistic data. Interesting compilations of anthropological evidence are: E. J. Krige, *The Social System of the Zulus* (1936); Julius Lips, *The Savage Hits Back* (1937), where an analysis of native opinion concerning Europeans is given; and M. F. Ashley-Montagu, *Coming into Being among the Australian Aborigines* (1937), in which the author discusses one of the most debated problems of primitive kinship and psychology, the ignorance of paternity. The volume entitled *Social Anthropology of North-American Tribes*, edited by Fred Eggan (1937), written by pupils of Prof. A. Ratcliffe-Brown and presented to him, gives interesting results of the work done by the Functional and Structural Schools in North America.

The last volumes of the various anthropological journals show the advance in the quality of field-work and the nature of theoretical interests. The extensive analysis of the 'Gunnu, a Fertility Cult of the Nupe in Northern Nigeria', by S. F. Nadel (*Jour. R. Anth. Inst.*, 1937), is both methodologically interesting and full of new information; as are also the shorter contributions of M. Fortes and H. N. C. Stevenson (*ibid.*). *Africa* for 1937 (and the preceding years) is a mine of information, containing such articles as: 'Introduction to Nyakusa Law', Godfrey Wilson; 'The Development of the Military Organization in Swaziland', H. Beemer; 'An African Christian Morality', M. Hunter; 'A Note on "Woman Marriage" in Dahomey', Melville J. Herskovits. From previous years we note important special numbers devoted to *Native Nutrition* (vol. 9, No. 2) and *Witchcraft* (vol. 8, No. 4).

The American Anthropologist for 1937 (vol. 39) contains interesting articles which deal with fundamental concepts, institutions, and aspects. The following may be singled out: 'Zuñi: Some Observations and Queries', by Li An-Che of Yenchin University, a contribution of outstanding importance to anthropological theory; an article on 'Primitive Law and Professor Malinowski', by W. Seagle, a provocative analysis of juridical concepts in their application to simple societies; an economic study by J. H. Provinse on the 'Co-operative Ricefield Cultivation among the Siang Dyaks of Central Borneo', and an excellent critique made by D. S. Davidson of some shortcomings in ambitious diffusionist schemes.

The inevitable passing away of indigenous cultures under the influence of western civilization has imposed upon anthropology the necessity of studying Culture Change, that is, the diffusion of western culture among the primitive peoples. In Great Britain, organized initiative in this respect has been taken by the already mentioned International Institute of African Languages and Cultures. In its journal, *Africa*, a series of articles especially devoted to the method of studying Culture Change has appeared (*see* vols. 8–9), following the first systematic outline by Dr. A. I. Richards (*Africa*, vol. 5, 1932), 'Anthropological Problems in North-Eastern Rhodesia'. Dr. M. Hunter's *Reaction to Conquest*, 1936, is perhaps the first comprehensive study of the encroachment of European civilization on a primitive tribe. Of the earlier work on Culture Change, that of Dr. Keesing, *Modern Samoa* (1934), was largely historical; and that of Captain Pitt-Rivers, *The Clash of Culture and Contact of Races* (1927)—a pioneering attempt—was concerned with general principles and the theoretical foundations of the problem.

In America, work of this type has been effectively pursued by Prof. Melville J. Herskovits, whose brief summary, 'The Significance of the Study of Acculturation for Anthropology' (*American Anthropologist*, 1937) and his fuller and more adequate statement on 'Applied Anthropology' (*Science*, 1936), based largely on the work on Negroes in the Old and New Worlds, expresses the American point of view.

Another extension of anthropological method consists in its application to modern societies. Here one approach has been through the widening of folklore studies, in which the lead, apart from the work done in Scandinavia, has been taken in certain eastern European countries. The work of the Institute of Bucharest, founded in 1918, has yielded rich results which are summarized by its Director, Démètre Gusti, in his *Monographie et L'Action Monographique en Roumanie* (1937). Similar studies have been carried out by the Institute of Rural Sociology of Warsaw (directed by three young scholars: J. Chałasinski, J. Obrębski, and A. Waligórski—the two latter trained at the London School of Economics; the first a pupil of F. Znaniecki, whose work on the *Polish Peasant in Europe and America*, written in conjunction with W. I. Thomas, was one of the earliest contributions to this type of sociology. *Middletown in Transition* (1937), by Mr. and Mrs. R. Lynd of Columbia University, is the second instalment of field-work on an urban community carried through by anthropological methods, the first having been published as *Middletown* in 1929. *The Irish Countryman* (1937), by C. M. Arensberg, is the result of sociological field-work conducted among Irish peasants and fishermen. Similar researches, made under the supervision of Prof. Lloyd Warner, by E. D. Chapple and others at Newburyport in Massachusetts, still await publication. The books of Dr. R. Redfield on the Mexican community of Tepoztlan, *A Mexican Village*, of Redfield and A. Villa on *Chan Kom*, and of Mrs. Elsie Clews Parsons on *Mitla* are important both as studies of Culture Change and as applications of field-work methods to modern communities. In England the ambitious and comprehensive schemes of field-work to be effected by 'Mass-Observation' under the direction of C. Madge, and by a team of workers at Bolton, led by Tom Harrisson, whose book, *Savage Civilization* (1937), has shown him to be, though not a trained, a highly gifted field-worker, are certainly a courageous and promising start.

The influence of anthropology thus manifests itself also in the demand that our own social problems and realities should be studied scientifically, that is, through direct observation on what really takes place; dispassionately, that is, without preconceived ideas; and against the background of real comparative knowledge, that is, of the data collected through ethnographic research and analysis.

(B. Ma.)

ANTIGUA: *see* Leeward Islands.

ANTI-SEMITISM. There were few developments during 1937 affecting the position of Jews in Germany, and no new repressive measures of importance were undertaken, though there was little alleviation of their lot. On April 21, orders were issued for the suppression throughout the country of all lodges of the 'B'nai B'rith', the Jewish charitable and social organization; Rabbi Dr. Leo Baeck, president of the United Jewish Lodges of Germany, and some 60 other persons connected with the lodges, had been arrested and questioned two days before; funds and documents were impounded, and the offices closed, while at the same time the secret police ordered that no meetings of Jewish associations, except the Kulturbund, should be held until June. The German-Polish Minorities Convention regarding Upper Silesia expiring on July 15, the Reich government announced on July 3 that the anti-Jewish legislation would at once come into full force in that area, and a special law was passed providing for the retirement or dismissal of Jews in public employment there as from the end of August. In November, a Reich law was promulgated providing that persons deprived of German nationality should no longer be entitled to inherit from German subjects (even their husbands or parents), and that German citizens may deprive of their legal portion in their estate any descendant who has married a Jewish or non-Aryan person since the Nuremberg laws were promulgated in Sept. 1935.

Herr Förster, Nazi leader in Danzig, announced on Oct. 10 that the Jewish population of the Free City was to be reduced to the same condition as that of Germany, and thereafter picketing of Jewish shops, and some attacks on them, occurred, for which the National Socialist Party disclaimed responsibility. The Executive Committee of the World Jewish Congress wrote, at the beginning of November, to Great Britain, France, and Sweden, the Powers appointed by the Council of the League of Nations to watch the situation in Danzig, expressing indignation at the anti-Jewish measures taken there.

In Poland, Jews were for the first time publicly branded as racially ‘ inferior ’ in April, by the announcement that no Jew was eligible for membership of the new National Totalitarian Party supported by M. Moscicki and Gen. Smigly-Rydz. On May 9, the Polish Medical Association barred Jews from membership, and the Lawyers' Association decided to limit the number of Jewish lawyers in the country to 10 per cent. of the total. On May 13, a serious pogrom occurred at Brest-Litovsk, lasting 15 hours, the 22,000 Jews in the city being left to the mercy of the mob. Many were injured, some fatally, thousands were ruined, and hundreds of Jewish-owned premises were damaged and looted. Towards the end of the year, measures discriminating against Jews were taken in the universities, numbered seats being introduced at Warsaw, and all non-Aryan students being segregated in a ‘ bench ghetto ’. On one occasion Pilsudski's daughter, in protest, took her place among the Jewish students. A boycott of Lwow High School was proclaimed by the Nationalists, as the Rector refused to introduce a similar system there.

In Rumania, anti-Jewish measures were much intensified during the year. In May, the Federation of Rumanian Professional Associations, covering lawyers, university professors, doctors, pharmacists, engineers, teachers, and artists, decided to eliminate Jews, with other members of racial minorities, from those professions. At the end of December, after the formation of the National Christian Government, M. Goga, the premier, announced that Jews would be excluded from journalism and government service and that the State would have no commercial dealings with enterprises with Jewish capital or personnel ; at the same time three Jewish-owned newspapers of wide circulation, *Dimineata*, *Adeverul*, and *Lupta*, were suppressed.

Except in Palestine (*see* ZIONISM), there have been no serious anti-Semitic activities in other countries, and in Great Britain itself there have been only slight evidences of a latent anti-Jewish feeling (*see* BLACKSHIRTS).

APPROPRIATIONS AND EXPENDITURES: *see* GOVERNMENT EXPENDITURES.

AQUARIUMS. Undoubtedly one of the most ambitious designs in aquarium construction was begun in 1937 on the coast of Florida, in the United States, 16m. south of St. Augustine. This undertaking, decidedly unorthodox as compared with any existing aquarium, entailed the construction of two immense outdoor tanks of concrete. One is 75ft. in diameter and the other, rectangular, 100ft. by 40ft. Visitors may view the exhibits from above as well as from windows in the walls. It is proposed to display in these tanks much larger specimens of ocean life than any aquarium has heretofore attempted, and the enclosures are to be as much like miniature oceans as possible. The supply of suitable sea water is largely an engineering problem, albeit one of considerable magnitude. Plans include the use of these large tanks for public exhibition, the taking of motion pictures, and scientific study. The project is to be self-supporting. The problem of capturing and handling without damage the immense creatures contemplated is a difficult one. A new municipal aquarium is under construction in Baltimore.

Plans have been laid for the construction of a government aquarium at Colombo, Ceylon. It is to include both marine and fresh-water displays, and is to be operated in connexion with a fisheries laboratory.

In Great Britain various activities are reported from the aquariums. New illuminated plaques, describing the habits of various exhibits, were installed at the Zoological Society's aquarium, London. The staff constructed special deep sea fish tanks for the research ship *Discovery II*. An exchange of specimens was arranged with the United States and specimens were acquired from Captain Vipan's dispersed collection ; these included two sterlets or fresh-water sturgeon sent by the Tsar of Russia in 1888 and primitive sail-fins from tropical Africa. New exhibits included dragon fish from tropical waters, long-nosed coral fish and the Congo cave fish, an inhabitant of underground waters which has lost all trace of eyes. Two new scenic tanks for exotic fish were shown at Brighton aquarium ; Bristol built a new fish-breeding house ; Liverpool and Chester opened new tropical sections. Grimsby's aquarium was transferred to Worksop and opened with a collection of cold-water fish and fancy gold fish. Edinburgh hatched a young ray and is rearing salmon.

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ARABIA, the general name of the vast peninsula (*c.* 1,100,000sq.m.), much of which is largely desert and still unexplored, bounded on the north by Transjordan and Iraq, on the west by the Red Sea, on the south by the Gulf of Aden and the Arabian Sea, and on the east by the Persian Gulf and the Gulf of Oman. Nominally under the sovereignty of Turkey from the 16th century till the World War, it has since become divided into the kingdom of Saudi Arabia, the imamate of Yemen, the sultanates of Oman and Kuwait, and the British Crown Colony and

Miss Freya Starke]

ARABIA—A SLAVE'S SOLDIER ESCORT, LOOKING SOUTH FROM HAJARAIN

H. I. Cozens]

KUWAIT—OPEN MARKET PLACE WITHIN THE CITY WALLS

Protectorate of Aden, and (in the Persian Gulf) the British Protectorate of the Bahrein Islands.

Of these, by far the most important is the kingdom of **Saudi Arabia**, formed in 1932 by the union of Hejaz and Nejd, with certain dependencies, and occupying under its King, Ibn Saud, about 800,000sq.m. with a mainly nomadic population of about 4,500,000 Arabs. The capital is Riyadh, in Nejd, almost in the centre of the peninsula. There are no great cities ; Mecca, in the Hejaz, the largest, the birthplace of Mohammed and in consequence the great pilgrimage centre of all Islam, has some 70,000 inhabitants ; Jeddah, the chief port, at which pilgrims for Mecca arrive, about 30,000 ; Medina, where the Prophet died, about 20,000.

The people of the country are entirely Mohammedans, largely of the Wahhabi sect, of which the King is the head. There is no organized educational system, but some elementary teaching is given in connexion with the mosques.

Dates, wheat, and barley are grown, and some other fruits, but pasturage is more important than agriculture, camels and sheep being extensively raised, and horses exported to India and elsewhere. The country's mineral wealth is almost entirely unexploited, though concessions for oil borings have been secured by foreign interests. Manufactures are practically non-existent. Transport is now very largely by motor-car ; the roads are generally mere tracks, though a partly-metalled road connects Mecca with Jeddah. The Hejaz railway runs from Damascus in Syria to Medina, though the portion passing through Arabia is not at present in use ; and pilgrims to Mecca travel from Jeddah largely by motor omnibus.

The unit of coinage, since 1936, is the riyal, agreeing in weight, size, and fineness with the Indian rupee, exchanging at par at the rate of 20 to the gold sovereign.

No statistics of State finances or of total trade are available. The exports from Saudi Arabia to the United Kingdom in 1935 were valued at *c.* £21,000 and the imports from the United Kingdom at *c.* £70,000. There are English and Dutch banks at Jeddah.

Ibn Saud is organizing a small regular army, but *ad hoc* levies are the ordinary defence forces. A few aircraft have been purchased.

Yemen is a kingdom (present ruler, the Imam Yahya Muhammad Hamid ed Din) in the south-west of the Arabian peninsula, south of Saudi Arabia and north of Aden, about 75,000sq.m. in area, with some 3½ million people. Its capital is San'a (population *c.* 40,000) ; other towns are Hodeida, the largest seaport (*c.* 50,000), Zabid, and Mocha, whose coffee is exported from Hodeida. . The people, who are mainly Shiite Mohammedans, are largely engaged in growing coffee and cereals (wheat, millet, and barley).

Oman, a sultanate of about 80,000 sq.m. at the south-east corner of Arabia, governed at present by Sultan Sayyid Said bin Taimur, is mainly a mountainous and unfertile tract (save for the Batinah coast, extending about 100m. north-west of Muscat). Its population is about half a million, including many negroes. Muscat, the capital, with the town of Matrah, which adjoins it, has a population of some 13,000, and is a seaport of importance, on the mail route to India. Dates are grown and camels bred. Transport is by motor or pack animal. There is considerable trade with India, rice, coffee, and sugar being imported ; dates, limes, and dried fish are exported. In 1935–36 the imports were valued at *c.* £285,000 and the exports at *c.* £245,000.

The sultanate of **Kuwait** is a small state at the head of the Persian Gulf, adjoining Iraq on the east and north. It is ruled at present by Sheikh Ahmed Ibn Jabir al Subah. The population, excluding nomads, is some 80,000. The capital and port of Kuwait (population *c.* 60,000) is a place of call for Imperial Airways liners, and an important depot for the Gulf and Indian Ocean carrying trade. Boats and dhows are built in the local shipyards. Exports in 1934–35 were valued at £80,000 and imports at £277,000.

On the south side of the bay at the south end of the Persian Gulf are the territories of the six **Trucial Sheikhs** of Sharja, Abu Dhabi, Dhabi Ummel, Ras el-Khaimah, Qawein, and Ajman, along what was formerly called the Pirate Coast. The Sheikhs are in close treaty relations with the British Government, through the political resident in the Persian Gulf at Bushire. Their territories cover about 6,000sq.m., and have some 80,000 inhabitants. Pearls are exported to India.

The history of the Arab countries during 1937 has been mainly concerned with the Pan-Arab movement centred at Damascus, and supported by Italy. The Italian radio station at Bari was used during the year to disseminate anti-British propaganda by broadcasts in Arabic, and as a counter-move the B.B.C. began in the New Year, 1938, to broadcast programmes in Arabic. At the Pan-Arab congress at Bloudan (Syria) in September, all the Arab States, except Yemen, were represented, and the president, Naji Survaidi, former prime minister of Iraq, said that Arab support of Britain must depend on the latter's abandonment of Zionism, 'a cancer in the body of the Arab countries which must be removed, otherwise it would cause the death of the body'. Unless Britain agreed to this course, she could no longer count on Arab support in time of need, and the Arabs must seek a new alliance to protect their rights. No generally acceptable scheme of Arab federation, however, has yet been mooted. In the late autumn overtures of friendship were made to the Yemen by Mussolini, who made a present of tanks and machine-guns to the Imam, the latter responding with a gift of Arab horses.

ARBITRATION, INDUSTRIAL. In Great Britian the year 1937 was one of contrasts. Although there were more industrial disputes than in any year since 1920, the smoothness with which adjustments in working conditions were generally made affords further evidence of the effectiveness of the various forms of joint machinery, and of the resolve of the organizations of employers and workpeople to use constitutional methods of settlement. One of the most spectacular disputes of the year was that of the London busmen in May. This was settled through the intervention of the conciliation department of the Ministry of Labour, and the men returned to work without the concession of their principal demand, but with considerable overhauling of their schedule duties. Many stoppages of work which occurred throughout the year were of an unofficial nature; that is, the men ceased work without or against the advice of officials of their unions.

The latest annual report of the Ministry of Labour, published in April 1937, states that the Ministry was concerned in differences and disputes between employers and workpeople in a wide range of industries. Wherever possible, an endeavour was made to incorporate in any settlement better provision for the avoidance and proper negotiation of future difficulties. Considerable attention is also being given to strengthening and establishing proper joint machinery for the negotiation of wages and working conditions, and the settlement of differences where there is evidence that the existing methods are inadequate.

In 47 industries, wages and working conditions are decided by trade boards, on which sit representatives of all interests in the industries. The great majority of disputes are normally settled by direct negotiations between the firms involved and the appropriate trade unions. There is no doubt that in recent years the trade unions have gained increased prestige as negotiating bodies. Their total membership, which now exceeds 4 millions, does not reflect the number influenced by their activities. When trade unions negotiate wage increases, the benefits are shared by unionists and non-unionists alike. In some industries, arrangements are made for regular meetings of representatives of employers and workpeople, irrespective of disputes, for a general review of industrial progress. In this way, a high degree of the mutual understanding of difficulties has been developed. This is particularly the case on the National Maritime Board—which governs conditions and wages of officers and men in the Mercantile Marine, in the engineering industry, and in shipbuilding. A recent development in industrial relationships is the establishment of a joint consultative committee in the coal-mining industry, which for many years has been more regularly disturbed by disputes than any other. This joint consultative committee has no executive authority, but has already proved its usefulness as a means of exchange of views and consultation over difficulties. It is significant that, since this committee was established early in 1936, there has been no major crisis in the coal-mining industry. It suffered, however, from 450 disputes of a local character, these being largely concerned with non-unionism or with the rival unionism between two associations in the Nottinghamshire coalfield, arrangements for the amalgamation of which were concluded in July.

One of the most interesting developments in industrial relationships during the year has occurred in the distributive trades. These trades have been difficult to organize in the past, and there has been serious undercutting of wages, but important new agreements between representative employers' associations and the unions were ratified during the year, and there has been a joint request to the minister of labour to consider the legalization of these agreements in order that non-observance by recalcitrant employers can be eliminated.

United States.—The outstanding development in industrial arbitration during 1937 was the validation by the Supreme Court on April 12 of the National Labor Relations Act—the so-called Wagner Act of 1935. Aiming to promote collective bargaining as a means of preventing strikes affecting inter-State commerce, the law prohibits defined practices as managerial interference with employees' rights to choose representatives for collecting bargaining. The Act is administered by a board of three, and seeks peaceful settlement of that issue—union recognition and collective bargaining—responsible for both a growing proportion and the most violent of industrial conflicts, and peculiarly unsusceptible to traditional methods of arbitration.

The Federal Department of Labor intervened during the fiscal year 1937 in 1,267 industrial disputes, involving 1,383,588 workers, or nearly one-third of the year's total of 3,619 strikes. Adjustments were obtained in 1,016 cases. The strengthening of the Federal agency is one of the important present needs.

The year brought some notable instances of intervention by prominent officials. Outstanding was that by the governor of Michigan, assisted by conciliators from the Federal Department of Labor, whose unremitting efforts from the beginning of the automobile strikes, promoted agreements—one between the General Motors Corporation;

and the other between the Chrysler Company, on the one hand, and the United Automobile Workers of America, on the other—recognizing the union as the collective bargaining agency for its own members. Intervention in the 'little steel' strikes, however, proved unavailing against the relative ineffectiveness of the strikes and the anti-union attitude of the companies involved. Collective agreements were sought similar to that signed with the United Steel Corporation. But neither the Federal conciliation service, nor the special mediation board of three members appointed by the President on June 17, nor the supporting efforts of the governors of the States involved, were able to bring the two sides into joint conference. The strike was regarded as a defeat for labour; cases involving its issues are now before the National Labor Relations Board.

Thus the year 1937 turned a dramatic page in the continuing effort to promote orderly labour relations in industry through government intervention. The years ahead project the real test of present machinery in the United States for that end—machinery embodying experiments with legal protections to organized collective bargaining, as well as the more traditional procedure of mediation, conciliation, and arbitration. These methods receive their trial amid some of the most significant developments in history—changing government policy towards labour and business, huge unionization campaigns in mass-production industries, and the internecine struggle within the ranks of labour itself. Difficult as it is already, the task of all arbitration machinery, Federal and State, has been rendered much more complicated by the split between the American Federation of Labor and the Committee for Industrial Organization, and the competition among all unions, whatever their affiliation, for membership and the right to represent labour. (*See* also Strikes and Lockouts.)

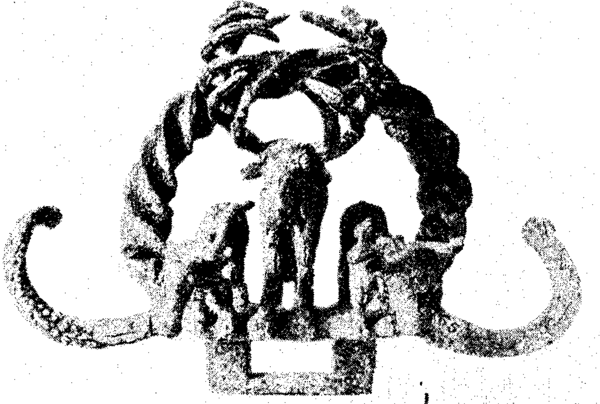
ARCHAEOLOGY. In the following article the eastern and western hemispheres are separately considered; and in the case of the eastern hemisphere, which is taken first, certain archaeological periods are taken in chronological order.

Old Stone Age.—The world-wide extension of exploration has shown that the culture sequence deduced from the stratigraphy of western Europe does not give an exhaustive or universally applicable summary of man's industrial development. In Lower Palaeolithic times, there existed, parallel to the Chellean and Acheulian cultures, typified by the *coup de poing* or hand-axe, also flake-cultures to which hand-axes were alien—the Clactonian, appearing already in Chellean times in western Europe, and the Levalloisian that is not demonstrably earlier than the Acheulian. But by the latter period the several cycles often interact. Still, even in the Middle Palaeolithic of western Europe, archaeologists distinguish (1) a pure Mousterian (simple flakes without hand-axes), (2) a Mousterian of Acheulian tradition, using hand-axes, and (3) a Mousterian using the Levallois technique. The Middle Palaeolithic cultures of Africa and Hither Asia seem all technically Levalloisian though the type tool is in form a Mousterian point. The same type tool also survives in an Upper Palaeolithic context in China and Siberia, and, in association with specialized variants, also in the Aterian of north Africa and in the Bambata and Still Bay cultures of central and east Africa. (*See* brief summaries in Burkitt, *The Old Stone Age*; Leakey, *Adam's Ancestors* and *Stone Age Africa*; and for details, Breuil, 'Le Clactonien', in *Prehistoire*, i.)

Palestine.—A culture sequence has been definitely established with Dr. Garrod's publication, in *The Stone Age of Mount Carmel* (1937), of the stratigraphy observed and materials collected in three caves in the Wady Mugharet. The succession reported is (from the base up) as follows: (1) a crude flake industry equivalent typologically and stratigraphically to the Tayacian of La Micoque in the Dordogne; (2) a very rich Upper Acheulian, interrupted by a thin layer containing blade tools of Upper Palaeolithic aspect; (3) deep Levalloiso-Mousterian layers yielding remains of 12 human skeletons; (4) a Lower Aurignacian; (5) two or three stages of a culture typologically ancestral or equivalent to the French Middle Aurignacian; (6) the mesolithic Natufian.

South Africa.—In the same year, Dr. van Riet Lowe geologically fixed the development of the hand-axe cultures in 'The Geology and Archaeology of the Vaal River Basin' (*Geological Survey Memoir*, 35). Pebbles flaked into tools—the African pre-Chellean—go back to a dry epoch preceding the 'first wet phase'. The latter then witnessed the development of the African Chellean, and three phases of African Acheulian characterized throughout by hand-axes and cleavers which are often made from flakes and, from African Acheulian II on, from flakes struck from Victoria West cores, prepared by a sort of proto-Levalloisian technique. In a second wet phase the same cycle, but now blended with the Levalloisian, reappears as the Fauresmith culture, equivalent to Leakey's Nanyukian in central Africa. The Memoir admits that Africa as a whole during Lower Palaeolithic times formed a province of the hand-axe cultures. These embraced India, too, extending as far north as the Punjab by the Second Interglacial, and even reached Java, but have not yet been reported in Upper Asia. (*See Early Man*, p. 257; *Bull. Raffles Museum*, Ser. B, 1936, 57; *Proc. Amer. Philos. Soc.*, 77 (1937), 290–308.)

Fossil Men of Lower Palaeolithic age have become relatively well known since 1928, no fewer than four new specimens being reported during 1937. Three additional skulls of the genus *Sinanthropus*, from the caves of Chou-kou-tien, near Pekin (where the genus was first discovered in 1926), were announced in *Nature* on Feb. 13, and the first reconstruction of a complete *Sinanthropus* skull was published there on Dec. 11. In the *Illustrated London News* of Dec. 11, von Koenigswald described from Central Java a new skull of the genus *Pithecanthropus*, more perfect than the famous skull-cap discovered by Dubois in 1891, but derived from the same Middle Pleistocene horizon. An infantile skull, discovered in 1936 with an Early Pleistocene fauna at Modjokerto, is now thought to belong to the same genus. Neither *Sinanthropus* nor *Pithecanthropus* demonstrably made hand-axes. Both are exceedingly ape-like, with a continuous bony ridge (supra-orbital torus) above the eyes, a retreating forehead, a low skull, and a chinless lower jaw equipped with a 'simian palate' on the inner side. The cranial capacity of the new *Pithecanthropus* is only 750c.c. (150c.c. less than that of Dubois' skull); that of *Sinanthropus* varies in the new skulls from 1,050c.c. to 1,200c.c. Weidenreich opined (*J.R.A.I.*, 1937, 51–66) that *Sinanthropus* was more primitive than *Pithecanthropus*, but might be ancestral to *Javanthropus*, another archaic hominid found during 1934 in the Late Pleistocene deposits of the Solo River, east Java. Antler axes and harpoons, comparable to the Lyngby and Azilian types of mesolithic Europe, were found at the same horizon. Of all the skeletons of Lower Palaeolithic age so far discovered, none unambiguously represents the authors of the hand-axe cultures, nor yet is universally accepted as being on the direct line of ascent to modern man. But the Middle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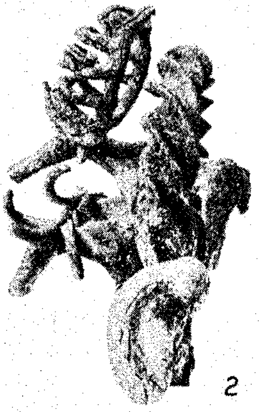
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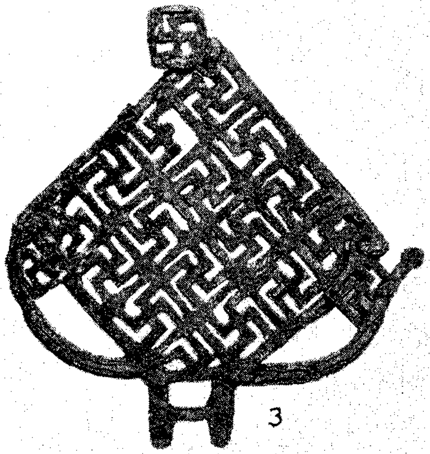
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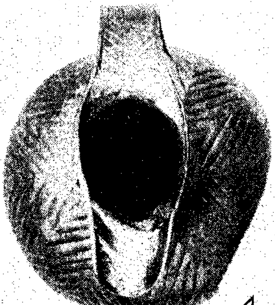
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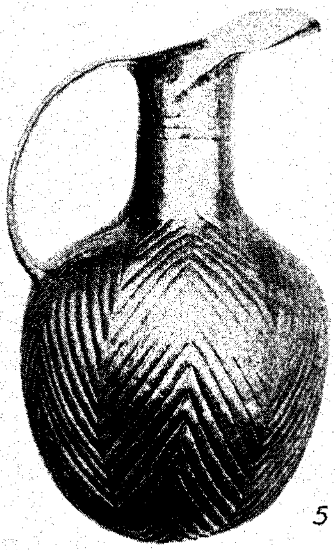
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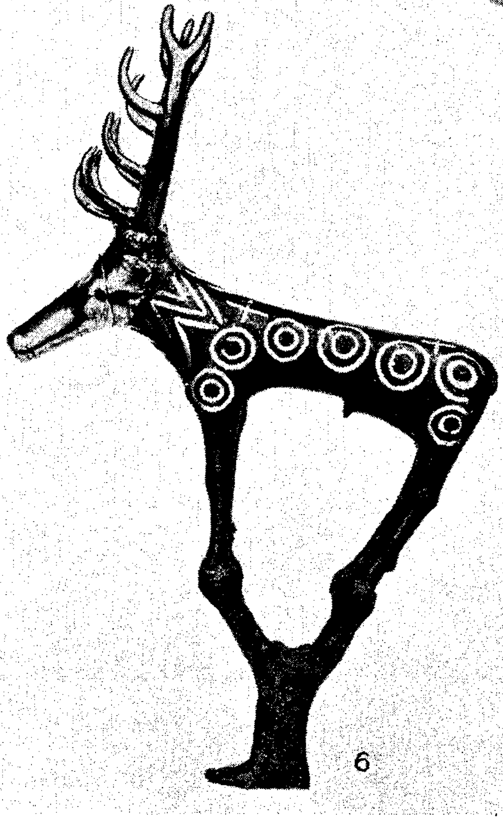
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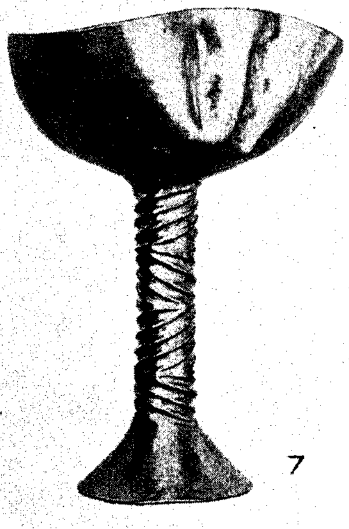
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PHOTOGRAPHS PUBLISHED THROUGH THE COURTESY OF THE MUSEUM ETNOGRAFII, ANKARA, OF SOME OF THE BRONZE AGE OBJECTS DISCOVERED IN ANATOLIA IN 1937

(1) COPPER ' STANDARD ' FROM ROYAL TOMB (B), ALACA HÜYÜK. THE STAG'S AND FAWNS' HEADS ARE PLATED WITH SILVER.
(2) COPPER ' STANDARD ' FROM ROYAL TOMB (B), ALACA HÜYÜK (SIDE VIEW).
(3) OPENWORK ' STANDARD ' OF COPPER SHOWING SWASTIKA PATTERN, ALACA HÜYÜK.
(4) GOLD JUG FROM ROYAL TOMB, ALACA HÜYÜK (TOP VIEW).
(5) GOLD JUG FROM ROYAL TOMB, ALACA HÜYÜK.
(6) COPPER STAG WITH SILVER MASK AND INLAYS FROM ROYAL TOMB, ALACA HÜYÜK.
(7) GOLD CHALICE FROM ROYAL TOMB (B), ALACA HÜYÜK.

Palaeolithic population of the Mount Carmel caves comprised individuals that combined in a single skeleton peculiarities found in the Neanderthalers who created the Mousterian culture of western Europe with others distinctive of modern men—for instance, a supra-orbital torus and a good chin (*Early Man*, 41–53 ; 349–60).

Upper Palaeolithic.—In this phase, too, archaeologists to-day recognize, instead of a single evolutionary series, a multiplicity of distinct contemporary cultures. So in east central Europe and Russia a series of cultures ran parallel to the Aurignacian, Solutrean, and Magdalenian of France. Their decorative art was not naturalistic, but employed geometric patterns, notably the maeander (at Mezin in the Ukraine) and the spiral (at Malta in Siberia), but for magico-religious rites female figurines were carved in ivory. Their faces are generally left featureless, but in the *Illustrated London News* of Oct. 2, 1937, Absolon published a fine palaeolithic ' portrait head '—a tiny carving of mammoth-ivory from Vestonice, in Moravia, apparently contemporary with the western Upper Aurignacian.

Mesolithic.—The first appearance of man on the frozen plains of northern Europe has been put back to Late Magdalenian times by Rust's publication in 1937 of his excavations at Meiendorf and Stellmoor, north of Hamburg. While the plain was still open tundra, reindeer hunters used to camp on it between June and September beside small meres. On the camping-places only flint-blade tools survive, but the peat and mud of the adjacent meres have preserved tools in all stages of manufacture out of reindeer antler, antler harpoons, arrow-heads, and knife-handles with flint blade still in place, and the skeletons of whole reindeer that had been cast into the waters, weighted with stones, as sacrifices. These reindeer were more closely allied to the American and east Asiatic species (*Rangifer arcticus*) than to the modern European reindeer (*R. tarandus*). Their hunters were but temporary visitants to these far-northern tundras, having their winter quarters probably in southern Germany.

Another encampment at Stellmoor, however, dates from a very much later time, when pinewoods had already invaded the tundra, though reindeer were still the chief game in north Germany. The reindeer were hunted by men of the Ahrensburg-Lyngby culture with arrows the wooden shafts of which as well as their asymmetrical tanged flint points have been preserved in the peat. Beside the mere, the hunters set up a reindeer's skull on a stout post—a sort of totem pole; and they were equipped with a sort of axe of reindeer antler, a first attempt at mastering the forests that in mesolithic times replaced the tundras and steppes to which palaeolithic hunters had been accustomed in Europe. The Ahrensburg culture is thus the oldest representative of the great cycle of what have been termed Forest Cultures. All these are distinguished, both from the earlier palaeolithic cultures and from the contemporary Azilian and Tardenoisian, by the possession of axe-like tools for dealing with timber. The Maglemosean of Denmark is only one facies of this complex, other aspects of which are seen east of the Baltic at Kunda and again to the west in south-eastern England. Thanks to the modern technique of pollen analysis, the several phases in the evolution of these mesolithic cultures can now be correlated with changes in the composition of the north European forest and of the climatic regime that conditioned them. (*See* Clark, *The Mesolithic Settlement of Northern Europe*, 1936 ; Childe in *Early Man*, 1937, 233–42 ; Rust, *Das altsteinzeitliche Rentier-jägerlager Meiendorf*, 1937 ; ' Die Grabungen bei Hof Stellmoor', in *Offa*, i, 1936.)

Neolithic.—A neolithic economy controlling its own food-supply by agriculture and stockbreeding could not evolve spontaneously in mesolithic Europe ; the cereals and domestic animals upon which it was based must have been introduced from Hither Asia or north Africa. And, in fact, systematic excavations during the last 10 years have amply demonstrated the hoary antiquity of the new way of life in Hither Asia. In the Natufian of Palestine, that lacks axes and pottery and is classed as mesolithic on account of its microlithic flint work, sickle teeth, mounted in bone handles, suggest that wheat or barley was already being cultivated. At Jericho the debris of ' neolithic ' settlements had formed an accumulation seven or eight metres thick before the local ' Bronze Age ' began about 3000 B.C. The high antiquity of food-production is even more dramatically demonstrated in Mesopotamia, at Erech and Nineveh, where the ruins of successive farming villages and townships had produced mounds 20 to 25 metres high before 3000 B.C. The earliest neolithic of the Orient may indeed be as much older than the classical neolithic of Britain or Switzerland as the latter is than the neolithic culture of New Zealand in A.D. 1800. (*See* Childe, *New Light on the Most Ancient East*, 1936, and, for Jericho, *Liverpool Annals of Arch. and Anthr.*, xxii–xxiii.)

The British neolithic culture represented in ' camps ' girt with ditches interrupted by frequent causeways and by burials under long barrows is now seen to be one branch of a great western cycle to which the earliest Swiss lake-dwellings also belong. It is characterized throughout by leathery pots that suggest a north African origin for the civilization, since very similar pots were current in the neolithic village of Merimde, north of Cairo, on the western edge of the Nile delta.

In 1937, a long barrow, the sepulture distinctive of neolithic Britain, has for the first time been found in a definite relation to a neolithic causewayed camp, during the fourth season's excavations at Maiden Castle, near Dorchester. The barrow, of the unprecedented length of 1,760ft., cuts across, and is therefore later than, the ditch of the original neolithic camp. Still the pottery from the bottom of the barrow's ditches is still purely neolithic, so that the monument was presumably erected before the ' Bronze Age ' Beaker-folk reached Dorset. These observations perhaps tend to enhance the probability that neolithic farmers first reached Britain as a result of a slow landwise trek across France rather before the diffusion of megalithic tombs by maritime intercourse along the Atlantic coasts.

Megalithic Tombs.—In *Antiquity*, 1937, 185, Daniel reminds us that the varieties designated respectively ' dolmens ', ' passage graves', and ' long stone cists ' (better ' gallery graves ') cannot be used as indicative of successive periods of time except in Denmark and Sweden, and even there do not evolve one out of the other without external stimuli. The several types of megalithic burial chambers may embody distinct traditions, but are often contemporary. While in Scandinavia megalithic tombs are products of a neolithic population, their builders in Mediterranean lands were generally, if not in all cases, using metal tools, presumably because the knowledge of metallurgy spread slowly from the south northwards. To call a megalithic tomb Neolithic or Bronze Age need not imply anything about its absolute antiquity.

Bronze Age.—The arts of metal-working were discovered east of the Mediterranean, and systematically applied first in the cities of Mesopotamia and the Indus valley and then also in Egypt. In Mesopotamia and India tin-bronze was in use at least as early as 2800 B.C. By this date society in Egypt, Mesopotamia, and India was already organized in cities, wherein secondary industry, trade, and public employment could absorb the surplus of a prolific agricultural population. The urban industries' need for imported raw materials (including metals) was a main factor in diffusing the science of metallurgy among surrounding barbarians. The routes whereby Mesopotamian technical skill was transmitted westward have been defined during 1937 by discoveries in Syria and Turkey.

Mari, on the Middle Euphrates (just west of the Syrian-Iraqi frontier), was an outpost of Mesopotamian urban civilization before 3000 B.C. Three large tombs, rather older than 3000 B.C., were announced in 1937. They are stone-built chambers roofed by corbelling, and thus anticipating Early Aegean funerary architecture. In one a human victim has been slain by pins stuck into his throat. A later palace at the same site, built about 1900 B.C., was adorned with fresco paintings, the earliest yet found in Mesopotamia. The naturalism of some scenes and certain motives employed suggest influence from Crete, perhaps even the employment of Minoan artists. Farther west, in the Orontes valley, the interaction of Aegean and Mesopotamian civilizations about 1650 B.C. is illustrated by Minoan patterns on the local pottery of Tal Atchana. (*See Syria,* 1937, 80, and 234 ; *Archiv. f. Orientforschung,* 1937, 86 ; *Illustrated London News,* Oct. 30, 1937 ; *J. Hellenic Studies,* lvi (1936), 130–4.) *See* also Minoan Inscription.

Anatolia.—Since 1929, excavations at Kusura, near Afyon Kara Hissar, and Ahlatlibel, near Ankara, have confirmed the belief that knowledge of metallurgy was transmitted to Troy (Hissarlik), on the Dardanelles, partly across the plateau of Asia Minor. By the third millennium B.C., these sites were little townships, where metal was used side by side with stone tools and worked into forms already familiar from Troy and central Europe ; their civilization was in general most closely allied to that of Troy. But a true estimate of the technical level attained has been made possible only in 1937 through the publication of the Turkish Historical Society's discoveries at Alaca Hüyük in the Halys basin, where a series of rich ' royal tombs ' came to light. Vessels of copper, gold or silver, illustrate shapes—beaked jugs, cups, and keeled bowls—already familiar in clay from Ahlatlibel and Troy. A spear-head with hooked tang and a copper ' frying-pan ' suggest connexions with Early Cycladic culture in the Aegean ; numerous hammer-headed pins prove contact with the Kuban culture of south Russia. Art is illustrated by rather stiff figures of stags and human beings in copper or silver, and much handsome openwork in gold or copper, on which the swastika sometimes appears. Despite the technical excellence of jewellery and metalwork—even iron was used for ornaments—the Anatolian civilization revealed by the tombs remains essentially barbaric, without writing or even seals. (*See* Turk Tarih Arkeologya ve Etnografya, *Dergisi,* ii, 3–90; Turk Tarih Kurumu, *Belleten,* i-ii (1937) ; *Archaeologia,* 86, 1–60.)

North-western Europe.—Metallurgical knowledge was transmitted both by sea-ways along the Mediterranean and Atlantic coasts (in the wake of megalithic tombs) and by land up the Danube valley. In 1937 Childe (*American Anthropologist,* 39, 1–22) and ORiordain (*Archaeologia,* 86, 195–315) emphasized the advantage conferred on the British Isles by the possession of both copper and tin and the consequent high relative antiquity and predominant influence of Britannico-Hibernian metallurgy in the early Bronze Age of northern and western Europe. Denmark and north Germany were still in a neolithic stage of culture, while the British Isles were in full mastery of bronze. This British Bronze Age, inspired by sea-borne commerce, began at least as early as the central European Aunjetitz Bronze Age that is rooted in Anatolia. Hence the Beaker-folk, who invaded Great Britain from the Continent in at least two distinct waves, did not introduce the arts of metallurgy, though they may have been the first British customers of the Irish-Cornish metal-workers.

Iron Age.—*Vitrified Forts.*—Excavations in Germany have suggested that vitrifaction was there produced by the ignition of ramparts constructed, after the manner of Gallic walls described by Julius Caesar, of two parallel facing walls of dry masonry tied together by transverse beams and containing a core of rubble and timbers. To determine whether this account would apply to Scotland, model Gallic walls were built at Plean and at Rahoy in 1937. The walls were successfully ignited by fires kindled against them, and burned for five and twelve hours respectively. On cooling, the characteristic phenomena of vitrifaction were observed in the cores of both walls. In the same year excavation proved that the vitrified fort at Rahoy was contemporary with a Gallic walled fort at Abernethy (about 200 B.C.). Since Gallic forts were being erected in Scotland as early as any vitrified forts, and since the conflagration of their ramparts would produce vitrifaction, this effect need not have been designed by their builders. (V. G. C.)

Western Hemisphere.—During 1937, progress in American archaeological research was advanced through the efforts of a host of individuals working under the auspices of a large number of organizations and institutions. The two countries in which the most archaeological activity exists are the United States and Mexico. A considerable amount of work in this field is also being carried forward in most of the Latin-American countries, especially in Central America and in western South America. The majority of the institutions sponsoring work in American archaeology are in the New World. However, certain European museums and scientific bodies contribute to the knowledge of the subject by the publication of the results of expeditions sent to the Arctic region, Mexico, Central America, and parts of South America.

One of the major problems of American archaeology is the determination of the antiquity of the human occupation of the New World, the distribution and routes of dispersal of these earliest Americans, and the kinds of cultures which they possessed. General interest in this fundamental question was greatly stimulated by the highly successful International Symposium on Early Men held in Philadelphia, Pa., March 17 to 20, 1937. On this occasion, the Academy of Natural Sciences of Philadelphia, in celebration of the 125th anniversary of its founding, entertained geologists and anthropologists from all parts of the world. Later in the year, a number of field parties secured evidence to be added to that already obtained, indicating that ancient man had occupied sites in at least Colorado, New Mexico, and California. Harvard geologists established that the artifact level at the Lindenmeier site of a Folsom village, near Fort Collins, Colo., was contemporaneous with the third phase of the Wisconsin glaciation, thereby strengthening the conclusion that man had already arrived in the New World at the time of the final stages of the last great glacial epoch.

MAIDEN CASTLE, DORSET. A PHOTOGRAPH, REPRODUCED BY THE COURTESY OF DR. MORTIMER WHEELER, OF THE IRON AGE ROADWAY, SHOWING WHEELTRACKS AND A SKELETON IN THE FOREGROUND

The second major problem of American archaeology, namely, that of studying the growth of individual cultures in the New World, also occupied the attention of many organizations. Many field parties were active in 1937, but the contributions which they have made to American archaeology will not be known until after the laboratory work has been completed and the results published. In nearly all parts of the New World examination of archaeological sites continued. Particularly interesting were the increased field activities in the north-western States and in the New England area. Archaeological field work was carried on also, as in former years, in the more actively interested countries of Latin America, especially Mexico, Peru, Brazil, and the Argentine Republic.

The United States Government continued to support the field studies by the Bureau of American Ethnology at the Lindenmeier site in Colorado, and sponsored work by the National Museum in Kansas. Under the auspices of other agencies, including the emergency administrations, the government also assisted a number of other archaeological field projects, the most important of which were the continued survey of the basins to be flooded by the constructions of the Tennessee Valley Authority, and the further investigations of archaeological sites in the neighbourhood of Macon, Ga., at which the Ocmulgee national monument was recently established.

The Mexican Government in particular supports an elaborate research programme upon the remains of the ancient cultures of the country. In the area of the Maya civilization, field parties from the Carnegie Institution of Washington and the University of Pennsylvania Museum carried forward the long-time projects of these institutions, in co-operation with the governments of Mexico, Guatemala, and Honduras. National museums in the South American countries continued their field investigations.

During 1937, progress has been made in the museums and laboratories in arranging, analysing, and interpreting the several varieties of archaeological data obtained through work in the field, bibliographic reference, and comparative studies with other museum collections; and improved techniques in the field have been reflected in the laboratories by a greater objectivity and a more critical analysis of the evidence. The increasing attention being given in the United States to laboratory problems is illustrated by the growing interest in the methods of ceramic technology, the inauguration of a project at the University of Chicago to study the application of tree-ring chronology to the eastern United States area, and the establishment at the Ohio State Museum of a lithic laboratory.

The year was also marked by the more clearly defined integration of interest among both professional and non-professional students of American archaeology. This was demonstrated by the nature of the emphasis placed on archaeology at the inter-organizational group meetings, such as the summer and winter meetings of the American Association for the Advancement of Science in Denver and Indianapolis respectively, the annual meeting of the American Anthropological Association, the spring meetings of its central section, and the annual meeting of the Eastern States Archaeological Federation. Most important of a number of more or less informal conferences upon archaeological subjects was probably the Chaco conference held in New Mexico in August. Internationally also there was evidence of similar integration. An Institute of Andean Research, organized during the year to promote and foster anthropological research in the Andean region, had on its executive committee a number of United States students of American archaeology. The growing influence of the Society for American Archaeology, now in its third year, is at least in part responsible for this increasing integration of interest among professional archaeologists and the growing co-operation between them and non-professional students of the subject.

The list of articles, reports, and books on American archaeology issued during 1937 is extremely long. The more significant publications included: *Early Man*, edited by G. G. MacCurdy, which is the report on the Philadelphia Symposium, spring 1937; *Archaeology of St. Lawrence Island, Alaska*, by Henry B. Collins, Jr., issued as one of the Smithsonian Miscellaneous Collections; *Rediscovering Illinois*, by Fay-Cooper Cole and Thorne Deuel, published by the University of Chicago; *Coclé*, by S. K. Lothrop, which appeared as one of the Memoirs of the Peabody Museum of American Archaeology and Ethnology of Harvard University.

ARCHERY. Of international significance was the seventh annual championship tournament of the International Archery Federation, which was held in Paris during the first week of August to determine the archery championships of the world. Representatives from England, Poland, France, Belgium, Sweden, Czechoslovakia, Norway, Finland, Switzerland, and the United States took part in this event. The men's championship was won by Monsieur De Rons of Belgium, and the ladies' championship by Mrs. Simon of England. In the English national championships, gold medals were won by Commander Shekleton and Mrs. Bates.

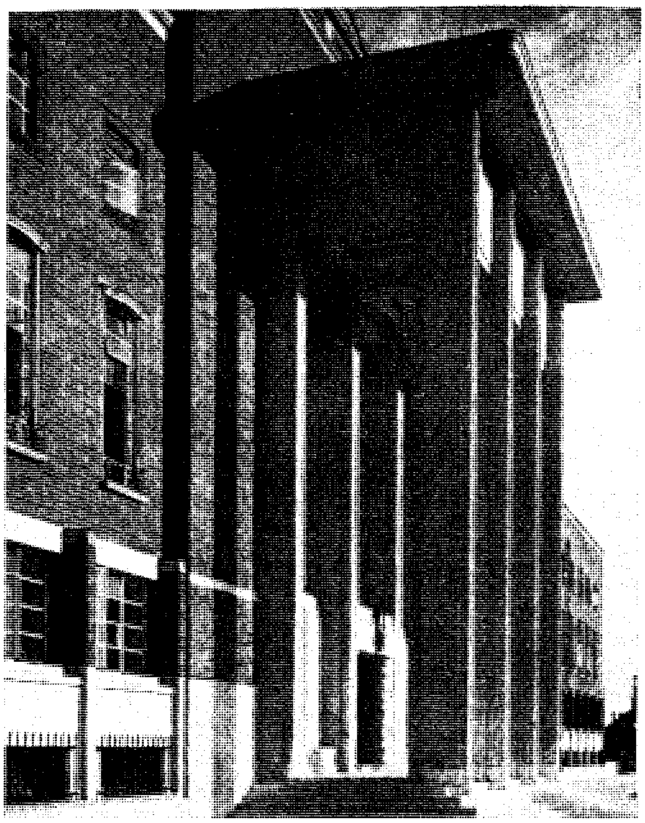
The most important archery event in the United States during 1937 was the 57th annual championship tournament of the National Archery Association held at Lancaster, Pa., July 19–23, with 178 archers participating. The winners and their scores were: men's championship, Russ Hoogerhyde; ladies' championship, Miss Jean A. Tenney. A record shot of 355yds. was made by Mrs. Millie Hill, Dayton, Ohio, in the ladies' flight shoot.

During 1937, a hunting preserve for the exclusive use of archers hunting with the bow and arrow was set aside in Pennsylvania. Similar hunting preserves also exist in Ohio, Indiana, and Oregon.

Of the 300 or more archery clubs in the United States, about 200 are using ranges provided by municipalities on public recreational fields.

ARCHITECTURE. The critical observer studying the architecture of Europe and the Americas as evidenced by the buildings which were finished in 1937, will note certain things : many new materials, especially in interiors ; some new methods of construction, especially in prefabrication ; remarkable simplicity in form ; little use of ornament, but the decorative employment of strong contrasting colours both on façades and interiors ; brilliant, rustless metals ; extensive use of glass in a great variety of forms ; and all of these elements combined into strange shapes and masses which, when compared with the older surrounding buildings, would indicate either a revolution in architectural thinking or an evolution which has come over us so rapidly that it amounts to the same thing.

Materials.—Strictly speaking, no fundamentally new idea has appeared in construction, but standardization of parts made by machine on a mass production basis is becoming daily an increasingly important factor in architectural design. Important among the recently developed materials are plastics, the chemically developed resinous substances impervious to moisture, remarkably rigid, offering a wide range of colour, and surface textures grading all the way from a highly polished mirror surface to moulded forms of wide variety. Another material, glass, although familiar as it has been used in the arts for centuries, and as it is constantly used now for windows, tableware, and mirrors, is a new building material in the forms which adapt it for use as a wall surface. Formed in the shape of brick or of rectangular panels, varying in thickness from an inch to several inches, it is used in combination with metal bracing for interior partition work, where it is necessary to exclude the passage of sound while admitting that of light. It is also being used in thick blocks for exterior walls, serving in this case as the very structure itself. It is completely non-absorbent, highly resistant to heat and cold, very sanitary since it can be kept clean easily, and, when used on exteriors in smoky cities, seems to wash itself. Sometimes it is used in a translucent form to admit light to the interior ; sometimes in an opaque form simply as an exterior wall. Special metal alloys are coming into increasing use, typically the rustless metals. These are industrially produced alloys as distinguished from the metals to which we are more accustomed, such as iron, steel, copper, etc., and, unlike them, are able to maintain their lustre and original colour without deterioration. All such alloys are beginning to play an important role both structurally and ornamentally. Finally, the older materials themselves—stone, marble, wood, terra cotta, brick—are being used differently, since the designer must consider machine production rather than hand production as a basis of his ornamentation. In the structural field, there have been technical improvements in methods of assembling the steel skeleton which is now almost universally adopted as the weight-bearing structure of the larger buildings. The noisy process of assembly by riveting is now being replaced by electric welding with no more noise than the low hum of the motor that generates the current. Concrete is being manufactured in large interlocking slabs, the necessary drying out having been done in the factory under perfectly controllable conditions. By using such slabs, floors, roofs, and walls are erected much more quickly and easily and without the subsequent loss of time for drying out that follows the customary usage of concrete.



Architecture Illustrated]

NEW CIVIC CENTRE, DAGENHAM, ESSEX. THE PORTICO. E. BERRY WEBBER, A.R.I.B.A., ARCHITECT

These few, but conspicuous, examples, are significant as illustrating the theory of transferring work from the field into the factory, where labour can be kept in year-round efficient and scientifically co-ordinated employment. In 1937, this theory was being put into effective operation.

For many years the architect was guided in his design by a desire to keep the prospective building in harmony with its surroundings. But when, in the past decade, building as a whole slowed down rather suddenly owing to lack of private capital for investment, such buildings as were built had to be very simple, functional, and practical. Factories and other forms of industrial building had been built this way for many years, but they had been planned by engineers or contractors. Architects seldom designed such structures.

Functionalism.—It so happened, however, that even before the World War the fact came to light that structural requirements, *i.e.* ' functional ' plan, more often conflicted than harmonized with the ' architectural ' design of a building. With simple good sense, therefore, the younger group of architects, perceiving additionally that one reason for this state of affairs was the rapid progress which science had enabled engineering to take, proceeded to put the ' horse before the cart ' at least long enough to find out what kind of architectural thinking was appropriate to scientific engineering. The interesting period of ' functionalism ' has much solid accomplishment to its credit, whatever the somewhat emotional controversies it inadvertently caused.

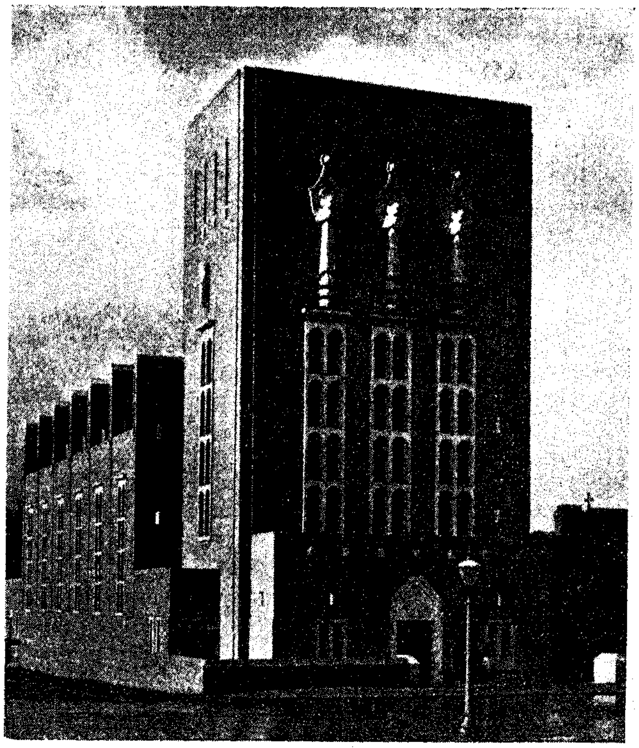
While a few buildings appeared from time to time from this functional school and caused considerable interest in the architectural world, the real opportunity for such an approach to the architectural problem came when lack of funds made it necessary to get a more rational plan and make fuller use of the new materials which science had to offer. Thus it was the depression, providing economic justification for the experiment, that gave the 'functional' form of architecture a chance to prove its contentions concerning architectural design.

When the world became more closely knit through intercommunication, people began to conceive of architecture in terms of architectural styles. It became a rather definite habit of mind to approach a building problem by selecting, on a purely personal, emotional basis, an architectural style, and to build in that style irrespective of whether it was suited to the environment or to the practical functioning of the building. Since the public had become thus style conscious, the evolving school of architecture found it necessary to be a style and have a label. The terms 'International Style', 'Modern', 'Modernistic', 'Functionalism', etc., are some of the tentative labels; and 1937 shows by many examples that, as such, modern architecture has been accepted by the public. Just how well established it actually is, and to what degree it is indicative of a trend which will be realized in the buildings of the future, remains a question, for other and different approaches to the architectural problem may develop in the next decade. The following discussion of examples illustrates this point.

Paris Exhibition.—With a few exceptions, the exhibits of the Paris Exhibition of 1937 present a representative cross-section of national trends in architecture, because there were over 40 national buildings included as exhibits. The most impressive though by no means the most admirable specimens were those of Germany and Russia. It is interesting to note that both buildings—antagonistic though their governments are and different as their architectural plans at first glance appear to be—achieved an almost identical effect of aggressive, massive force. Doubtless this is, partially at least, the effect desired by both, and it results from taking similar liberties with scale and other design relations. The German building adapted classic modes to its own ends. The Russian building was a streamlined pedestal for an out-size statue of two workers. The most sympathetic critic who has any understanding of architecture is forced to conclude that, however beneficial heavy-handed government may be for the public soul, it is demoralizing to public architecture. The buildings were not modern, unless simply taking liberties with previously accepted concepts is enough to 'modernize' them.

There was a certain confusion between *modern* and *modernized* apparent throughout the exhibition. It was particularly obvious in exhibits such as those of Rumania and Hungary, where the buildings were really romantic in character, true enough to the mediaevalism that is typical of their historic architecture, but sterilized as to detail in the manner that is associated with modern work. As a way of being modern, these exhibits differed from those of Germany and Russia by a successful willingness to be pleasant, and there is no justification for believing that this particular phase of contemporary architecture is less significant—as far as indicating the trend of the future—than the more radical phases. The emotional connotations of a mode of architecture are a vital—if not the most vital—factor in determining its acceptance at a given time.

There were two buildings that fully merit credit as fine design, being genuine examples of the modern approach in architectural thinking. These were the Austrian exhibit and that of Yugoslavia. The Austrian building was thoroughly competent and possessed the same quality of distinction as the work of the American architects McKim, Mead and White—probably for the same reason, *i.e.* a theory clearly conceived and a thorough knowledge of all the materials used, including those that are simply architectural ideas. The Yugoslavian building likewise arrested attention by the quietness and sureness of its claim. A simplicity which included both charm and 'good taste' became almost dramatic, situated as it was in a gathering of buildings which were on the whole restless and aggressive.



Architecture Illustrated]

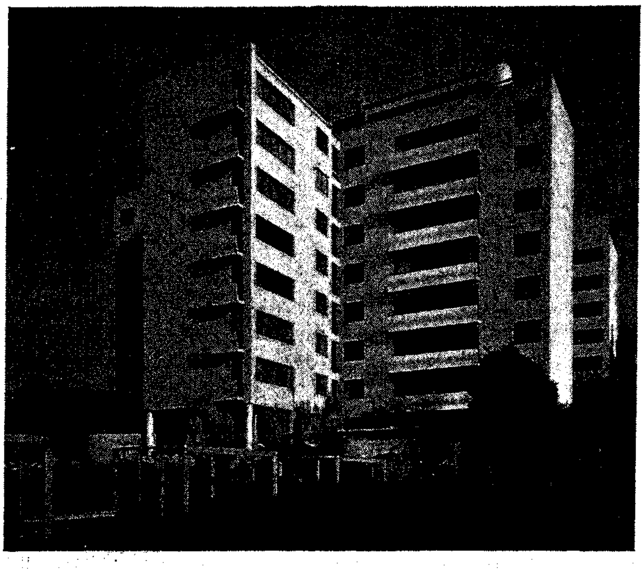
WEST FRONT OF ST. MONICA'S CHURCH, BOOTLE, NEAR LIVERPOOL. S. X. VELARDE, ARCHITECT

Of equal interest are the permanent buildings, the Trocadero and the Palace of Modern Art. The Trocadero is classic in its proportions, the orderly sequence of motives used, and its symmetry on a broad scale, but it is classic with none of the usual details formerly associated with this style. In the case of the Palace of Modern Art, regard for perfect balance is not stressed to such a degree. There is unusual freedom in the plan arrangement with an interesting play of changing levels as one passes from terrace to terrace in the forecourt of the building, then as one moves from gallery to gallery in the interior.

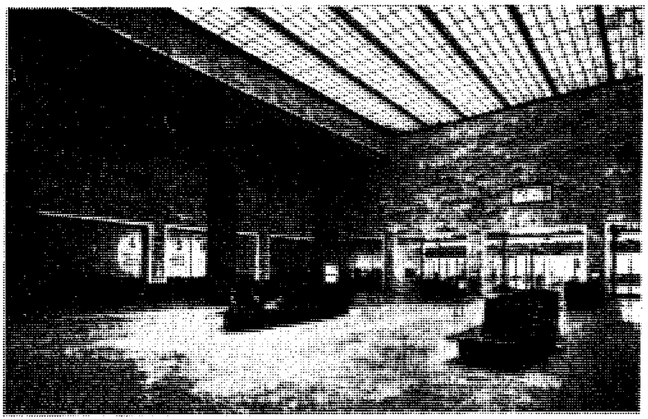
It is to be assumed that the crudity noted in some of the national exhibits is a perfectly normal symptom of a confused but earnest effort to adjust architectural thinking to rapidly changing social conditions, and that irrelevant inconsistencies will be eliminated, and details more carefully studied as the mode develops. The buildings of Finland, Sweden, Great Britain, Czechoslovakia, Canada, Denmark, and the United States all were typical of various aspects of the modern trend, and were sufficiently rational experiments. Finland, using corrugated iron vertically as a decorative surface, indicated the possibilities inherent in materials once they are considered objectively, apart from the ideas which have become attached to them. Sweden raised the question as to how necessary it may be to conceal construction members. Czechoslovakia gave a simple but convincing use of glass walls and, like Portugal, managed to do so in terms of pleasing and well-integrated detail relationships. Great Britain and the United States, without in either case achieving a design of great distinction, were important, perhaps, for indicating quantitatively the radical ideas activating the whole movement.

Whatever the quality of the design displayed there, the Paris Exhibition made it clear that the functional concept had been accepted in principle by the exhibiting countries, and the variations were due partly to national differences in politics, history, and temperament, partly to the fact that modern building so far has perforce been primarily experimental. Time is needed to prove which have been the most practical and acceptable ways of solving various architectural problems. An exhibition, by definition, is an architectural laboratory demonstration. That is its great value. It is of secondary importance whether each building is of such value as design that it deserves to be preserved. An exhibition is temporary, and because it is so, it affords to architects an opportunity to try out specific ideas quite clearly, so that designers can collect data as to what is an improvement and what is not. Every architectural theory requires to be studied in the third dimension, and at something near the ultimate scale, but it is only in exhibitions that this can be done, for only in such circumstances is the architect freed from the responsibilities attached to permanent, functioning buildings. In this sense, then, the Paris Exhibition was very significant, while finer individual examples of modern design can be found in the private and more permanent building of the respective countries.

Among the interesting private developments of 1937 are the flats at Highgate, London. These do more than demonstrate functionalism in plan, construction, and character of design. By meticulous attention to details, they make a very subtle and convincing demonstration of the degree to which the modern school of thought has become established. The fact that the potentialities of modern technique are utilized not merely to effect economies, but to realize, by conscious exactness, a self-consistent precision in design, is evidence of that intelligent study and apt utilization of the machine which will find and express the particular form of beauty intrinsic to it. The Highpoint flats are, therefore, not only a conscientious and very successful solution of a particularly difficult variety of architectural problem, but a challenge, as well, to those who regard modern design as a superficial style.



HIGHPOINT FLATS, HIGHGATE, LONDON



Italian State Tourist Department]
INTERIOR OF RAILWAY STATION, FLORENCE

It is interesting, as a matter of comparison, to consider the Rockefeller apartments in New York City, which are roughly equivalent in intention, and also the Williamsburgh housing project in Brooklyn, New York. The interiors and floor plans of the former are noteworthy for their attractive simplicity. (*See* HOUSING.)

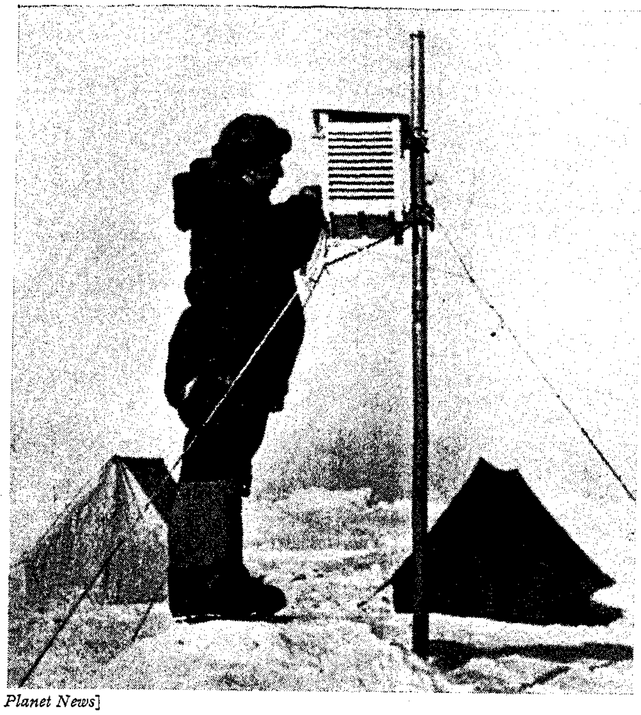
A different type of problem, and one in which design is less limited by economic considerations, is solved most admirably in the Florence railway station, Italy. While strictly functional in plan, construction, and concept, the very nature of the problem permits a monumentalism of which the architects have taken full advantage. Although subjected to criticism by those whose usual ways of thinking about architecture have been jarred, the point of great significance about this particular edifice is the fact that it is a true continuum of the grand manner typical of Italian architecture; that it is unmistakably Italian in spirit, unmistakably the modern architectural equivalent of a Renaissance palace.

In the same way, Rockefeller Centre, to which a new unit was added in 1937, is typical of what is most characteristically American in architecture. (H. W. C.)

ARCTIC EXPLORATION. The most notable achievements of 1937 have resulted from that general Soviet programme of northward expansion, consolidated in 1932 as the Chief Administration of the northern sea route, which under Professor Otto Yulievich Schmidt dominates all Soviet lands and seas north of 56° N. lat. During 1937, the Soviet Arctic scientific stations reached a total of 57, some of which have staffs comparable to the faculty of a small college, with a wide research schedule, while others are largely confined to the observation and wireless reporting of weather conditions and ice movement. The scientific and developmental programme of which these stations are a visible sign is expanding in many directions.

In 1932, for the first time a vessel, the *Sibiriakov*, negotiated the entire north-east passage in one navigation season. In 1935, 100 vessels traversed parts of the route, carrying 204,000 tons of freight, while four freighters completed the passage; in 1936, 160 ships carried cargo along portions of the route, and 14 vessels made through runs. Figures for 1937 were not yet available on Jan. 1, 1938.

Two countries are most notable in their use of planes beyond the Arctic Circle: Canada and the Soviet Union. A Canadian estimate is that some 30 aeroplanes flew within the Canadian Arctic during the year. A Soviet authority has it that about 300 aeroplanes were constantly employed within their Arctic. Ten regular air-lines were in operation, with a mileage of nearly 7,500m. The Soviets have numer-



Planet News]

YEVGENI FEODOROV, ONE OF THE SOVIET SCIENTISTS, READING METEOROLOGICAL INSTRUMENTS AT THE NORTH POLE, AT THEIR ENCAMPMENT ON AN ICE FLOE

ous air bases within the Arctic, most of them on the mainland, but three or more on islands to the north of Siberia. The most northerly is at Rudolf Island, near 81° 50′ N. lat., 58° E. long.

Polar Landings.—After a reconnoitring flight to the North Pole on May 5 by Pavl Golovin, a landing at the Pole was made on May 21 by a four-engined plane. In command was Professor Schmidt, the pilot was Mikhail V. Vodopyanov, and there were three others. They came from Rudolf Island, which they had reached by aeroplane. On radio report that they had landed safely, three other four-engined planes arrived with supplies. In the operation, at least nine successful descents and take-offs at different points were made. The planes returned to Moscow, leaving encamped on a stout floe Ivan Papanin, leader, Ernest Krenkel, Petr Shirshov, and Yevgeni Feodorov. The camp drifted at an average rate of more than three miles per day towards the Atlantic, and on Dec. 31, 1937, they had reached lat. 80° 0′ N., long. 6° 59′ W. The direction of drift was expected, but the rate has exceeded most predictions. The sounding taken near the North Pole of 4,290 metres (14,070ft.) is in conformity with Peary's no bottom of 9,000ft., taken also near the Pole in 1909. The weather report included summer rains. A fundamental oceanographic controversy appears to be settled by Papanin's radio dispatch of July 3, 1937: '. . . the investigations . . . have disproved Nansen's conjecture that the central part of the Arctic ocean holds extremely little life. A net raised from a depth of 1,000 metres fairly teemed with diverse molluscs, larvae, medusae, and crustacea'.

Other dispatches have mentioned, while still right by the North Pole, visits by seven different kinds of birds and by a mother polar bear with her two cubs. In the leads were crustaceans moving sluggishly near the surface and seals swimming about and gulping them down.

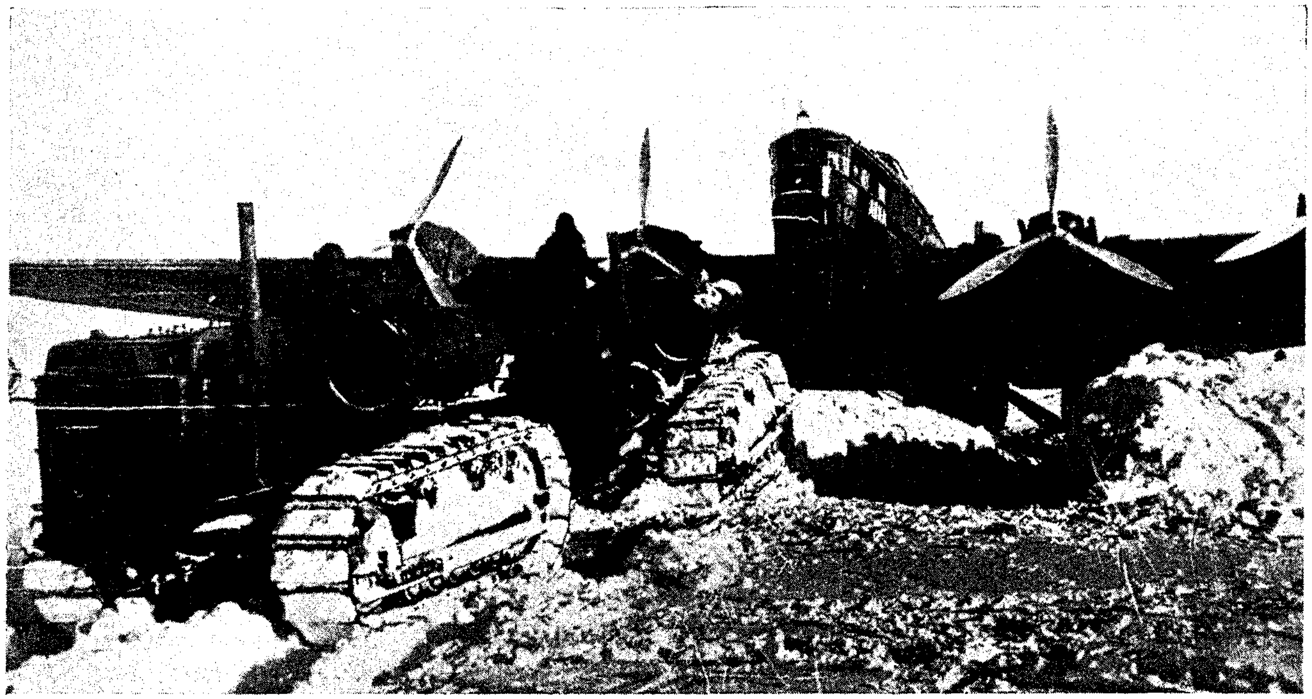
After the world was startled by the news that Soviet Arctic scientific station No. 56 had been established at the North Pole, came a similar announcement that station No. 57 had been established on Henrietta Island. This had been discovered by the American, George W. De Long, in 1881, and is particularly important for predicting the weather of the American territory of Alaska, as is also Wrangel Island (discovered by Captain Henry Kellett of the British Navy in 1849). The Soviet Government now maintains scientific stations on every group of their Arctic islands, and colonies with schools and hospitals on some of them.

In trans-Arctic flying, and in long-distance flying by way of the Arctic, there were three notable Soviet endeavours. Between June 17 and 20 Valeri Shkalov, Georgi Baidukov, and Alexandr Belyakov, in a single-engined monoplane, flew non-stop from Moscow by way of the Pole to Vancouver, Wash., encountering their chief difficulties, not over the Arctic sea, but over the continent of North America, and the worst of them after reaching the United States. Between July 11 and 14 this flight was repeated, and exceeded in distance, by Mikhail Gromov, Andrei Yumashev, and Sergei Danilin, who, again from Moscow by way of the Pole, reached San Jacinto, Calif., a reported mileage of 6,305·7, exceeding the previous long-distance record by 648m.

Soviet Disaster.—On Aug. 12 the most famous aviator of the Soviet Union, Sigismund Levanevsky, left Moscow with five companions in a four-engined passenger-type plane, for Fairbanks, Alaska. All went normally till he had reached the North Pole and flown perhaps 100–200m. to the Alaska side of it. Then came the first sign of difficulty and the last message that for certain was received from his plane. It was to the effect that, while they had been flying previously at 6,000 metres in clear air above clouds, they had now been forced down to 4,600 metres, and into clouds, by the failure of one of their engines, and that ice was forming on the plane. This flight was not only at a very foggy season, but at a time when the numerous previously level ice fields, suitable for emergency landing, had been cut up by summer rains and thaw water, so that nothing better could be expected than a 'pancake' landing which would destroy the under-carriage without seriously injuring the crew.

With this assumption, searches were immediately organized, from both the Old World and the New. The Soviets' own relief operations were so numerous and complicated, and have as yet been so incompletely reported, that only one series of journeys which combined heartening international co-operation with notable flight accomplishment can be referred to: that in which Captain Sir Hubert Wilkins, air commodore Herbert Hollick-Kenyon, relief pilot Silas Alward Cheesman, radio operator Raymond Booth, and mechanic Gerald Brown, flew in an American flying-boat of 4,000-m. range a total of 13,000m. over the polar sea, in five voyages between Aug. 23 and Sept. 21, highest latitude 87° 10′ in W. long. 148°. Before midwinter, Soviet relief planes equipped with skis or wheels assembled at Rudolf Island, on the European side, and the Wilkins party again took the field on the American side with a twin-engined plane mounted on skis. The plan from both sides is to search by moonlight during midwinter, beginning with the January full moon; from late February the flights will have daylight, which becomes perpetual over the search area in March. The operations should continue at least until fogs become a serious handicap, in May or June.

Weather Forecasting.—The search for Levanevsky brought about international co-operation between scientific organizations and governmental departments of the United States, Canada, and the Soviet Union, co-ordinated by the Explorers Club of New York City. From this co-operation



Planet News]

TRACTORS USED BY THE SOVIET NORTH POLE EXPEDITION IN FRONT OF ONE OF THE AEROPLANES ON THE ICE

have come practical results, among them an increased accuracy in weather forecasting, particularly noticeable for Alaska and the Pacific coast of North America, but considerable for the whole continent as far east as the Atlantic seaboard.

Also of importance in forecasting are the weather reports sent out by the Arctic wireless stations of the United States Army from Alaska and of the Canadian Government from the north coast of Canada and from Hudson Bay.

During the summer of 1937, supplies were freighted via the north-west passage for the first time; goods coming from the west met the Hudson's Bay Company's supply ship coming from the east via Bellot Strait—the first time a ship had traversed the strait. No one has yet made the entire north-west passage in one season.

British Expeditions.—Several small British expeditions are working in the eastern section of the Canadian Arctic. One, the Canadian Arctic Expedition of 1936–39, under the leadership of T. H. Manning, studies the western shores of Hudson Bay from Southampton Island northward, and the west coast of Baffin Island. Four out of five of the members of the expedition have returned to England, leaving Manning to work alone. The British Arctic Expedition 1937–38, commanded by D. Haig-Thomas, with its main base at Thule, north-west Greenland, plans a survey journey down the east coast of Ellesmere Island. R. Bentham's one-man expedition (British) carried on geological investigations in the southern portion of Ellesmere Island.

J. M. Wordie (British) cruised to southern Ellesmere Island and Baffin Island; a rapid survey was made along the north-east coast of Baffin Island. There were experiments with miniature balloons for the study of cosmic rays in the neighbourhood of the magnetic pole. A large archaeological collection was obtained by excavation in ancient Eskimo settlements.

An American expedition, commanded by Clifford J. MacGregor, was established at Reindeer Point, near Etah, Greenland, with purposes chiefly meteorological. A summary of the weather is forwarded to Washington twice daily. Miss Louise Boyd, American explorer, continued the northern work which she has been doing for the past 11 years, sailing in June for Greenland to make studies of the undersea shelf believed to connect north-east Greenland and Spitsbergen.

For the first time in several years a whaling fleet operated in the Arctic, in the waters between Greenland and Franz Josef Land. Commercially successful coal mines are being worked in Spitsbergen on a scale of more than half a million tons per year. The economic developments of the Soviet Arctic to the east, from Spitsbergen to Bering Straits are so extensive as to be bewildering.

Mapping and scientific studies were carried on in Greenland, chiefly by Danish and Norwegian expeditions, but also by scientists of several other nationalities. Denmark continues to maintain Greenland as a legally closed country and carries forward its benevolent medical and other work on behalf of the Eskimos. There are considerable economic developments, as, for instance, the expansion of sheep farming, which is now well beyond the 10,000 head limit, and the encouragement of fisheries, such as the special facilities given to Faroese fishing ships on the west coast. (V. S.)

ARGENTINA, second largest country in South America, a republic, on the Atlantic coast of southern South America; language, Spanish; capital, Buenos Aires; president (1937) Augustín P. Justo.

Area and Population.—The area is 1,079,965sq.m.; an official estimate of population (Dec. 31, 1936) gave 12,561,361, with 76·9 per cent. native-born of European stock (predominantly Spanish), 3·2 per cent. mixed blood, 19·9 per cent. foreign-born (practically entirely European). Immigration was estimated at 38,000 for the first nine months of 1937. As a result of immigration and colonization conventions made during 1937 with Denmark, the Netherlands, and Switzerland, a substantial increase is expected, especially to the Andean valleys of the far south. The chief cities, with estimated 1936 populations, were: Buenos Aires, approximately 3,500,000, including suburbs; Rosario, 507,784; Córdoba, 238,300; Avellaneda (a suburb of Buenos Aires), 214,566; La Plata, 190,577; Santa Fé, 125,295; Tucumán, 123,572. Twenty-eight other cities have populations in excess of 25,000.

History.—Argentina has a federal form of government, with legislative powers vested in a congress. In the first half of 1937, a year of presidential elections, congress was engaged chiefly in political activities, though legislation for land settlement colonization to be financed by the government, and for minimum wages, maximum hours, and regulation of working conditions was introduced. In the September elections, Dr. Ortiz, late minister of finance, the candidate of the 'Concordanica' or government coalition, was elected president for a six-year term beginning Feb. 1938.

In April, the assassination of Josef Riedel, Argentine leader of German Nazi activities, in Buenos Aires, roused strong feeling and caused representations to be made by Germany. The offer of the United States, in July, to lease naval vessels to Brazil and other Hispanic-American states for training purposes (*see* BRAZIL) stirred great opposition in Argentina.

Trade agreements were made in 1937 with Czechoslovakia, Germany, Italy, and the Netherlands. A temporary *modus vivendi* with Peru terminated a serious trade dispute of several years standing, and pointed the way to a definite treaty. A tripartite agreement with Bolivia and Paraguay for commissions to develop further trade relations among the three countries was signed in February. In June, the senate ratified eight Pan-American peace treaties, the outgrowth of the Buenos Aires conference of Dec. 1936.

Trade.—Argentine foreign trade increased notably in 1937. Imports were estimated to be nearly 40 per cent. and exports 49·5 per cent. greater than in 1936. This was caused principally by increased shipments of cereals, which in turn brought about a sharp rise in bread prices, so that on Oct. 29, the government forbade wheat and wheat-flour export until the new harvest. Great Britain continued to hold first place in this period, but her proportion of exports had fallen from 34·9 per cent. to 26 per cent., and imports from 21·3 per cent. to 19·6 per cent., while the United States, continuing as second, had increased her position, until, in October, for the first time since 1928, the States led Great Britain in exports.

By far the greater part of Argentine external commerce is handled through Buenos Aires, which is served by numerous shipping lines. The port of Bahia Blanca serves northern Patagonia and the southern Pampas region; Rosario, on the Paraná, similarly serves the river provinces, while Rivadavia, in southern Patagonia, is important for the growing oil industry. Regular air communications are maintained with Chile and with Uruguay and Brazil, and through them with all parts of the American continent, besides domestic services which link together the more distant parts of the country. During 1937, weekly service to Tierra del Fuego was authorized.

Argentina has 40,642km. of railway lines, of which 9,264 are government-owned. In November, the government took over an additional 1,960km. for a one-year period. By decree of Feb. 12, 1937, the government authorized the reconstruction of the Trans-Andean Railway, inoperative since Jan. 11, 1934, when landslides blocked it. A maximum cost of 5,614,489 pesos was set. Resumption of service would revive a trade with Chile which formerly took 66,000 head of cattle annually. Argentina has almost half the total of telegraph and telephone lines in South America, approximately 315 million km. The country is traversed by approximately 300,000m. of roads of various types, including national and provincial roads. Present construction will bring the total of national highway mileage to 22,237 by the middle of 1938, including a 2,000-m. highway to Tierra del Fuego. Eventually, this network will connect with the international Pan-American highway system.

Agriculture, Manufactures, Mineral Production.—Argentine resources are primarily agricultural and pastoral. Timber resources are very limited except for the quebracho, source of tannin (with a production of 21,488,615 tons in 1935), so that Argentina supplies two-thirds of the world output; maté (Paraguay tea) is also produced in large quantities chiefly for domestic consumption. About 10·75 per cent. of the area of the entire country is under cultivation; while 34·4 per cent. is devoted to the pastoral industry.

The chief agricultural production is in cereals and linseed. The latter production is the world's largest. Cotton production has undergone a rapid development in recent years with 308,834 hectares (1 hectare equals 2·47 acres) under cultivation in 1936, and a production of 80,957 metric tons. Because of drought conditions the 1937 crop was only 31,170 tons. Crop reports from Argentina in Nov. 1937 also indicated a sharp decrease in cereal output, especially in wheat, due to heavy frosts; and it was prophesied that the wheat crop would be the smallest with two exceptions for 15 years, with an estimated yield of 185,000,000 to 195,000,000bu. compared with 247,000,000 bu. in 1936. Argentina, in 1934, had 30,867,852 head of cattle, 39,329,781 of sheep, 3,768,738 of swine.

Manufacturing is developing rapidly but is in no way adequate to supply domestic needs. In 1935, a comprehensive industrial census was taken; provisional statistics made public in 1937 showed 40,367 industrial establishments. Of principal importance among them were the meat-packing houses, who employed 27,663 persons to produce products valued at 440,030,565 pesos. This and the quebracho industry are the only ones producing commodities entering extensively into foreign trade. A small shipbuilding industry exists, and in April 1937, the oil-tanker *Presidente Figueroa Alcorta*, said to be the largest vessel ever built in South America, was launched. There is no great mineral wealth except petroleum, in which Argentina ranks eleventh in world production, with an output estimated at 15,550,000 barrels in the year ending Oct. 31, 1937. The chief fields are in the vicinity of Rivadavia (Patagonia) and are, in the main, government-owned.

Finances and Banking.—The monetary unit is the paper peso (£1 = 18 pesos approx.). Argentina has the highest credit of any Hispanic-American country. No bonds of the central government are in default, although several provinces have suspended interest payments. For the third year in succession the budget was balanced in 1936, with a total of 873,300,000 pesos. The budget for 1937 was reduced to 833,900,000 pesos. A repetition of this budget, with slight changes, was officially recommended for 1938.

Education and Religion.—Along educational and collateral lines, Argentina is one of the most advanced of all Hispanic-American countries. The country had, in 1936, 12,867 schools, with 1,882,791 enrolment, maintained at a cost of 242,148,900 pesos. More is spent per pupil than in any other Hispanic-American country; almost twice that in the second country (Chile). The universities, especially those of Buenos Aires and La Plata, have high international standing. The Roman Catholic Church is officially recognized by Argentina, but all sects are tolerated. Most of the population is Roman Catholic.

Army and Navy.—There is a regular army of approximately 30,000 men. Military service for one year, or naval for two years, is compulsory. The Argentine navy is the largest in South America. The government has been actively enlarging the navy in recent years. During 1937, seven new destroyers, built in Great Britain, were launched.

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(L. W. BE.)

ARIZONA : *see* UNITED STATES OF AMERICA.

ARKANSAS : *see* UNITED STATES OF AMERICA.

ARMAMENTS, WORLD. From the point of view of armaments, the course of history since the end of the World War falls into three fairly distinct phases. Immediately after the War, a combination of exhaustion and idealism led the Powers to limit or reduce their expenditure on armaments. The Washington Naval Treaty represented the high-water mark of this period. There were always exceptions to the rule, notably certain smaller Powers in the south-east and east of Europe, to whom the thrifty French, under the ægis of the late M. Poincaré, made lavish loans for armaments. The quiescent period may be said to have been closed by the failure of the Geneva Naval Conference of 1927 and the consequent retirement of Lord Cecil from the British cabinet. With this triumph for the 'realists', a somewhat indefinite period ensued, the advocates of a new international order fighting a rearguard action against the 'realists'. Finally, the latter came into their own with the Japanese invasion of Manchuria in the autumn of 1931; from that point the international situation has progressively deteriorated, and the world's armaments bill has been enormously inflated. Among other factors which have promoted these movements, to which increased expenditure on armaments is directly attributable, the advent of the Nazi regime in Germany and the Italian invasion of Ethiopia stand out. The extent to which expenditure on armaments has been increased varies from country to country. Germany, partially disarmed under the provisions of the Treaty of Versailles, has almost certainly rearmed to a much greater extent than any other Power. Official figures of current armaments expenditure in Nazi Germany are not available, but, comparing the figures of 1931–32 with an unofficial estimate for 1937, it would appear that such expenditure was ten times more in the later than in the earlier period. In the case of France, though the proportionate increase is not so great, partly because her steps in disarmament were characterized by extreme caution, her estimates for 1937 nevertheless represented 'the highest total in peace-time history'.[1] Nor, in the case of France, is it sufficient to examine budgetary figures to ascertain her defence expenditure, for, ever since the construction of the Maginot line, it has been the custom to finance outlays which are deemed to be in the nature of capital expenditure by means of special accounts, for which the funds are provided by loans: 'In 1937 national defence will get its funds from a half-dozen different accounts, and from an extraordinary capital-expense budget which almost equals the ordinary military budget'. It should be emphasized, however, that the last reference is to the budget estimates for the army only, not the total defence estimates.

Wherever we look, the same story repeats itself. In 1930–31 the defence expenditure of Great Britain was £95,100,000; the 1936–37 estimates were for £173,900,000,[2] and the 1937–38 for £278,000,000. In 1931–32 the Japanese expenditure on armaments amounted to 454,600,000 yen; in 1936–37 the budget provided for 1,059,400,000 yen. In 1930–31 the United States expenditure amounted to 699,400,000 dollars; in 1937–38, comparatively insulated as the United States are from European or even, if they choose, Asiatic storms, the estimated expenditure was 991,600,000 dollars. In the case of Italy, if we examined the figures for 1931–32 and 1937–38 alone, we should have to say that here was an exceptional case, for the respective figures are 5,439,600,000 lire and 5,534,000,000 lire; but the latter figure does not include expenditure on colonies or on Ethiopia; and, apart from that, an unofficial estimate for 1935–36 (the year of the main Ethiopian campaign) is 15,561,400,000 lire, for 1936–37 17,415,600,000 lire.

The international menace of these huge armaments is a commonplace. They aggravate the disease which they are designed to cure. The strain which they impose on the economic system is an only less serious aspect of the matter. In Great Britain in 1936–37, defence accounted for 20 per cent. of the estimated budget expenditure; in France in 1937 the proportion was 29·7 (exclusive, of course, of the 'special accounts'); in Japan in 1936–37 the proportion was as high as 46·6; in the U.S.S.R. in 1937 it was 20·7; and in the U.S.A. for 1936–37 it was 11·4. Official figures are not available for Germany and Italy, but General Göring's slogan of 'Guns before butter' speaks for itself, as does also Signor Mussolini's capital levy. Taking the year 1931–32, the proportions of defence expenditure to total expenditure for the respective countries are as follows: Great Britain 10·8, France 26, Germany 6·5, Italy 27, Japan 30·3, U.S.S.R. (1931) 5·9, U.S.A. 13·7.

In wealthy, highly industrialized countries like the U.S.A. and Great Britain, the strain is of course less great than elsewhere; and its action is delayed. Rearmament, coming in both countries, as it did, at a time of industrial slump, undoubtedly gave industry, more especially the stagnant heavy industries of Great Britain, a welcome and necessary tonic. From an immediate point of view, probably the worst that could be said about the rearmament of Great Britain is that it has diverted public funds which could otherwise have been used for socially beneficial public works such as rehousing, that it has robbed the income-tax payer to pay the steel manufacturer, and that it has led to delayed deliveries in ordinary commercial contracts. From a longer point of view it has not only swollen the public debt, but it has also possibly led to that excessive expenditure on capital goods which causes a boom and, when the demand becomes less brisk, indicates danger of a slump. A concern which has ample resources and can afford to take a long view will be able to wait to do its buying till the selling is not so good; but most ordinary concerns want to do their buying and their selling quickly, and by doing so intensify both the boom and the danger of a consequent slump.

In Great Britain the economic consequences of rearmament are, in so far as they are bad, rather intangible and remote. In Germany they are neither. General Göring's slogan is a clever attempt to impart a heroic flavour to plain human misery. Its reverse side is the necessity of distributing winter relief to millions of Germans. The whole economic system is dislocated in order to enable Germany to pay for imports, such as copper and nitrates, which are necessary for her in enormous quantities in order to keep her armaments and munitions factories working at the pressure at which they have been kept from 1935 onwards. The situation is reminiscent of the story of the two men who flew from Moscow to Kiev during the first Five-Year Plan to see if there were any eggs there; there were none. Russia had exported all her eggs in order to buy aeroplanes. In most of the other countries of the world the economic effect of rearmament resembles the effect on Germany rather than the effect on Great Britain.

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[1] The figures are: *Germany*—1930–31, 617,000,000 RM.; 1936–37, 6,500,000,000 RM. *France*—1930–31, 16,073,900,000 francs; 1937, 19,238,700,000 francs.

[2] The actual cost being £186,072,000.

The Great Powers have not been alone in rearming. The smaller Powers of Europe, Asia, and America, and the British Dominions have followed suit. It is significant that the recent general election in Australia was fought largely on a defence issue which involved, among other things, a decision as to the type of rearmament which the Commonwealth should carry out. In all, measured in dollars (1936 parity), the world's defence expenditure rose from 4,067,200,000 dollars in 1931 to 10,730,700,000 in 1936.[1] This expenditure must be responsible for a substantial part, at least, of that rise in the price of commodities which has taken place since 1931. The effects of this rise have on the whole been beneficial, but, in so far as it has not been due to expenditure of a frequently recurring nature, it must be short-lived and conduce to that economic instability which is so potent a factor for war.

In this connexion it will be of interest to examine some of the ways in which the leading rearming Powers have allocated their expenditure. Certainly one of the most striking increases since 1931 is in sums which many of the Powers spend on their air forces now, as compared with then. Germany had no air force in 1931. She is now, perhaps, the greatest air Power in the world, and while no authoritative figures are available either as to her defence expenditure or as to the material actually in use, one of the most striking aspects of her strength is her capacity for the rapid building of aeroplanes; this capacity has been rated at between 400 and 800 aeroplanes a month.[2] This must clearly involve a very high degree of capital expenditure, the creation of a plant and an organization which are not normally working at anything approaching full pressure. Information as to manufacturing capacity is, for obvious reasons, not easy to obtain in connexion with any Power; but, to put it at its lowest, it is at least a reasonable guess that other Powers have to some extent followed Germany's example, for in the present state of invention, and in view of the wastage which would inevitably occur in war, the capacity to build aeroplanes quickly is almost the vital factor in a nation's air strength. Some indication of the extent of expenditure of this kind is provided by the British air estimates for 1936–37, in which 'technical and warlike stores' and 'works, buildings, and lands' were jointly responsible for a total of £35,896,000.

Outside air forces, it is equally clear that immense sums are being spent on objects which cannot, in the nature of things, recur except at very long intervals or in time of war. The naval construction programmes of the United States, Japan, and Great Britain; Great Britain's expenditure on the Singapore base and on the strengthening of the Mediterranean bases; France's 'special Treasury accounts' which financed the construction of the Maginot line, and in 1937 were estimated to comprise extraordinary expenditure of a total of 9,448,300,000 francs; above all, the astounding efforts which raised Germany to 'a commanding position of military power' by the end of 1936, only 21 months after the denunciation of the military, naval, and air clauses of the Treaty of Versailles: all these must be responsible, with other factors of the same kind, for a dislocation of the world's economic system which has no parallel except in the war of 1914–18. Great Britain, France, Germany, Japan, Russia, and the United States are certainly all spending twice as much on defence as before the War—Germany, it is estimated, about six times more; and Italy's defence expenditure has also increased very substantially. While the preparations for the next war have for the time relieved the slump which was the direct consequence of the last, the same causes produce the same effects, and it is necessary to recognize the danger that the near future will see another period of economic stringency which may drive discredited rulers to desperate courses. (W. T. WE.)

ARMENIAN S.S.R. A Transcaucasian republic, a member of the U.S.S.R. (*q.v.*), bordering on Georgia, Azerbaijan, Turkey, and Iran. The capital is Erevan; the national flag has a red ground, with, in the top left corner, a gold hammer and sickle and the initials 'Հ. Խ. Ս. Հ.' Leading cities, with 1936 populations, are: Erevan 144,300, Leninakan (formerly Aleksandropol) 73,300, and Kirovakan (formerly Karaklis) 15,400.

Area and Population.—Area: 30,000sq.km. Population (1933): 1,109,000 (rural 845,000, urban 264,000), 84·7 per cent. being Armenians, and 8·2 per cent. Turks. The chief languages spoken are Armenian, Russian, and Azerbaijan. The total number of school children (1936–37) was 242,000, and there were 13 higher educational institutions with 5,000 students.

History.—On March 23 the Ninth Extraordinary Soviet Congress in Erevan adopted the new Armenian Constitution. According to it, Armenia is no longer a member of the now dissolved Federation of Transcaucasian Republics, but belongs directly, as an independent Union Republic, to the U.S.S.R. It includes the capital and 27 districts. At the end of December a sensational anti-Trotskyist trial began, at which eight leading personalities of the country were indicted, including two vice-commissars for agriculture, and the rector of the university. They were accused of sabotage and plotting to separate Armenia from the U.S.S.R. On Dec. 12 96·2 per cent. of the population took part in the elections to the Supreme Council of the U.S.S.R.

Trade and Communications.—Sown area (1936): 1,668sq.m. In 1937, 88·7 per cent. peasant households were collectivized. The main agrarian pursuits are: cotton and fruit (especially grapes) production, and animal breeding. The natural resources include copper, marble, and water power from the Sevan Lake. The retail trade turnover (1936) was 0·5 milliard roubles, and the output of industry (1936 at prices 1926–27) was 180 million roubles. The length of railways (1936) was 401km., and 2,307,000 tons of freight were carried. (S. YAK.)

ARMIES OF THE WORLD. The past two years have seen in most countries a crystallization of policy with respect to the size and type of army. Many details are still the subject of experiment with consequent changes, but the fundamentals are no longer a matter of doubt. This crystallization is due to a number of causes. First, the progressive failure of the world's peace machinery has forced even the most pacifistic countries to recognize the need for sufficient armament to ensure protection of those policies essential to national security. Second, the experiments carried on in most countries have determined the powers and limitations of the newer weapons with their increased rate of fire, of gas, motorization, mechanization, and aviation. Third, the war in Abyssinia against a semi-savage enemy occupying a difficult terrain, the Civil War in Spain, and the operations of the modernly armed and equipped Japanese army over vast distances in China against all types of Chinese troops, from poorly armed and equipped to reasonably first-class units, have given a wide opportunity to try out peace-time experiments. Fourth, the new German army has taken definite form. The drastic German disarmament carried out as a result of the Versailles peace treaty gave Germany the opportunity to build a new army ' from the ground up '. The victors in the war of 1914–18 have first to clear away the old structures before they can begin on a new.

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[1] These figures are taken for about 60 countries. A few minor countries are omitted.

[2] See *Foreign Policy Reports*, Feb. 15, 1937: *The Rising Tide of Armament*, by William T. Stone and Helen Fisher (published by the Foreign Policy Association, Inc.).

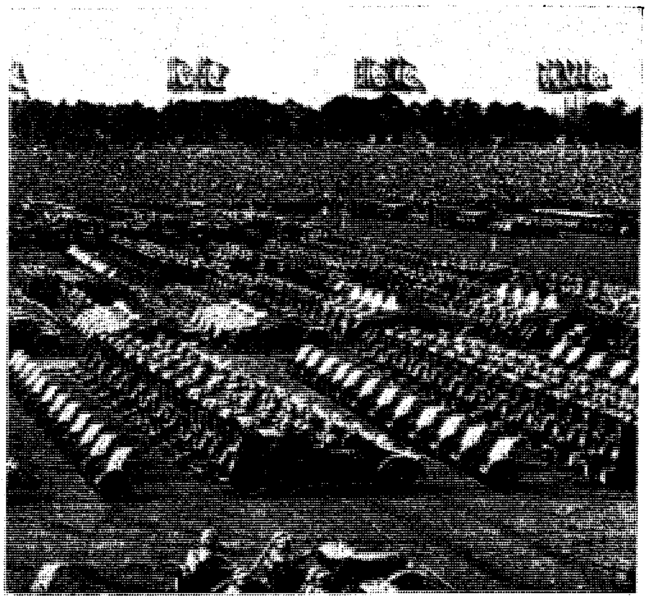
The two most important questions concerning the proper organization of an army were caused by aviation and mechanization. They were first, whether aviation alone could produce decisive results, thus making large armies on the ground unnecessary ; and second, whether a large force of armoured and armed motor vehicles, manned by a comparatively small number of highly trained military personnel, could cut through, destroy, and defeat large bodies of infantry in the same manner as did the armoured knight in the heyday of feudalism.

Aeroplanes and Tanks.—During the World War the best type of weapons to be used against aeroplanes and tanks were not developed. Above all, the necessary type of range-finding and sighting apparatus did not exist. To-day, just as the development of adequate fire power proved to be the answer to the invincibility of the knight, the rapid and accurate fire quickly developed by anti-aircraft and anti-tank weapons has put aviation and tanks in a position such that they are less to be feared by well-armed, well-trained, and well-led infantry than was true in 1918.

The backbone of the new German army is the infantry. Each infantry division has, however, a far greater proportion of anti-aircraft and anti-tank weapons of all types, as well as artillery, than has ever before existed for the same number of infantry. It might be said that the infantry of a German division marches and fights surrounded on the ground and in the air by a hemisphere of fire. In fact, the development of fire by modern, well-equipped, well-trained, and well-led infantry and artillery is so great that tanks need the assistance of this fire if they are to attack successfully.

In general, the mission of aviation on land is : first, when the opposing nations are close enough, to make air raids to delay mobilization and concentration of the enemy's army, and to destroy war factories and supply centres ; and second, to use its great powers of surprise attack to aid its own army on the ground. While deliberate attacks on civilian population with the intent of breaking a nation's morale are possible, such use of an air force is generally considered, aside from humanitarian grounds, of far less military value than the two purposes given above.

Besides aviation and tanks, the motor has caused three other changes in armies. One is the substitution in the cavalry of armoured cars and light speedy tanks for horses for reconnaissance and cavalry screen work (to keep enemy's reconnaissance groups from getting information concerning main body of the army). The second is the substitution of tractors for horse teams to haul artillery. The third is the transport not only of ammunition and supplies, but whole divisions complete, by motor transportation. This motorization will permit even more drastic changes in strategy than those produced by the use of the railways on a large scale, first, in the American Civil War of 1861–65, and secondly, by von Moltke in 1870. But the horse has not yet disappeared from either the cavalry or field artillery, as experiment shows that in many terrains and circumstances he is of more use than mechanization.



Wide World Photo

GERMAN ARMY. A GENERAL VIEW OF THE MECHANIZED UNITS DRAWN UP IN DISPLAY ON THE ZEPPELIN FIELD AT NUREMBERG IN SEPT., 1937.

Chemical Warfare.—Gas remains, as during the World War, a weapon of secondary importance. Up to the present there is nothing to justify the fear of its use to cause widespread destruction.

The constantly increased proportion of automatic weapons, of guns of all types, of mechanization and motorization, and the considerable number of men on the ground needed to maintain planes in the air, have greatly increased the proportion of specialists in all armies. In some countries the shortening of the term of service to eighteen months or one year has had to be compensated for by an increase in the number of professional soldiers, if the training was not to deteriorate.

Military Service.—In all countries of any importance except the United States, the British Empire, and China, the army is raised by universal service. In the United States and the British Empire the armed forces are raised by voluntary enlistment. In China, the different generals raise their own forces. For some years General Chiang Kai-shek has been trying to ensure uniformity of training and equipment and to bring all generals under control of the central government. He has been, however, only partially successful.

The length of active service in the universal service armies varies from 65 days for Swiss infantry, engineers, and foot artillery, and but one month's training for probably 25 per cent. of the Russian army, to an average for most armies of two continuous years, followed by various short periods from time to time while in the reserve. As the number of young men physically fit for military service each

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LISTENING APPARATUS USED BY THE AIR DEFENCE FORCES OF PARIS

year in most countries exceeds the number which can be trained in the standing or active army, this excess is generally given short periods of training from time to time. This is particularly true in Russia. It is their basis for claiming a far larger number of trained reserves than those possessed by any other country. On the outbreak of war the trained reserves are used ; first, to bring the standing army to war strength ; second, to mobilize new units made up of reservists; and third, to replace casualties. The British army service includes both active and reserve service. The U.S. army service is only active. Thus the U.S. army lacks even the enlisted reserves needed to bring it to war strength. It has an Officer's Reserve Corps.

In Italy, Germany, and Japan, boys and young men are given a certain amount of training before they reach the age of military service. In the United States, besides private and State military schools, there are limited courses of military training in a number of colleges, and each year camps at which a relatively small number of boys receive one month's training without obligation of service. In Britain there are Reserve Officer's Training Corps in many schools. In the United States the National Guard, a volunteer civilian military force, is armed and equipped and partially trained by the National Government. The Territorials in Great Britain are a similar force.

In Germany, besides the professional army, there are partially trained Black Shirts (12,000 are well trained and equipped), Brown Shirts, Technical Emergency Help Corps, and a number of other Nazi-uniformed bodies. In Italy, the Fascist militia, which is partially trained, has part of its force on active duty. In addition, there are Railway, Port, Forestry, Highway, Anti-aircraft, Coast Defence, and other militias.

Infantry.—The infantry division remains, as during the war of 1914–18, the basic unit of all armies to-day. When that war broke out, the standard type of infantry division consisted of two infantry brigades, each of two infantry regiments, in turn composed of three battalions of from 800 to 1,000 men. Each battalion was made up of four rifle companies. While the number varied somewhat, 36 field guns to 10,000–12,000 infantry, or 1·33 guns per 1,000 infantry could be taken as an average proportion. During the war, increasing difficulties in finding sufficient replacements for existing infantry units, coupled with the necessity of finding the personnel for the great increase in the proportion of machine guns to rifles, the introduction of automatic rifles, trench mortars, and anti-tank guns, all led to a reduction in the number of infantry soldiers in most of the infantry divisions of the French, British, and German armies. This was generally accomplished by reducing the division from four to three regiments, and each regiment from three battalions of four companies each to three of three companies each. Thus, instead of 48 companies of infantry, a division had 27 companies, a net loss of 21. As a rule, the artillery per division of infantry was not decreased, with the result that the proportion of artillery to infantry increased. As the amount of army corps (two or more infantry divisions to an army corps) and army (two or more army corps to an army) artillery steadily increased, as did the artillery directly under the commanding general of each national army, the proportion of artillery to infantry was greatly increased.

Post-war developments have steadily tended to increase the proportion of automatic weapons and guns of all types, which now include trench mortars, anti-tank and anti-aircraft weapons, as well as field guns and howitzers. Thus, to prevent the infantry division from becoming too cumbersome to be handled as a unit by the commanding general, a reduction in the number of infantry riflemen had to be made. The increasing use of motor transport to move the division also made a reduction advisable. Various methods of reduction have been advocated. A continuation of the war division of three regiments of infantry, each of three battalions of three companies, is one method. Infantry battalions of four companies each, but with a lesser number of men per regiment is another.

To-day Japan is the only important country in which the infantry division still consists of two infantry brigades, each of two infantry regiments made up of three- or four-company battalions. France, Germany, and Russia have suppressed the infantry brigade : each has three regiments of infantry to the division. Great Britain, from the days of the Cardwell reorganization, has used a battalion instead of a regiment as the tactical unit. Four battalions grouped together constitute a brigade. It is commanded by a colonel with the temporary rank of brigadier-general. Three of these brigades constitute an infantry division. The organization of an infantry division is being experimented with in the United States with particular reference to ensuring mobility for the whole division by means of motorization and mechanization. The probabilities are that this will lead to the replacement of the present division of two infantry brigades, each of two regiments of three to four company battalions, by one of three infantry regiments, each of three- or four-company battalions. In practically all armies the infantry regiment is now of three battalions. In the French, German, Italian, and Russian armies there are three companies to a battalion. In the British and Japanese armies there are four. An infantry division of 10,500 is the strength in most countries. Germany has but 8,400, while Japan has 15,138.

Artillery.—The proportion of rifles and light and heavy machine guns per 1,000 infantry soldiers varies. Japan has the highest number of rifles, 837, and France the lowest, 277; Germany the highest number of light machine guns, 38·6, and Italy the lowest, 23; Russia the highest number of heavy machine guns, 15·8, and Japan the lowest, 6·5. Germany leads with by far the greatest number of close-support weapons for the infantry, such as mortars, small-calibre light guns, howitzers, and anti-tank guns. Per infantry division the total is around 231. Most other countries average under 100. Russia has but 38. However, each Russian infantry regiment has six 76-mm. field guns assigned to it. This in addition to the divisional artillery.

The divisional artillery consists of one or more regiments of artillery, except in the British army, where there is no regimental tactical organization, the three battalions being organized into a brigade, which is the equivalent of a regiment in other armies. Where there is more than one regiment, the artillery is organized into a brigade. The regiments are of two to four battalions of two or three batteries each. Batteries are of three, four, or six guns, four being the more usual number. Except in the British and Italian armies, where only guns are assigned to the divisional artillery, this consists of both guns and howitzers. One of the questions under discussion in various armies is whether it is better to have only guns with the infantry division, the howitzers being with the Army Corps artillery and sent to the divisions when needed, or to have the howitzers an integral part of the divisional artillery. The light guns are about 3in. in calibre, and the heavy from 4in. to 4·5in. The light howitzers are about 4in. or 4½in. in calibre, and the heavy about 6in. The number of artillery pieces per 1,000 men in the division varies from 1·87 in the Japanese army to 3·49 in the German army. In all countries, while the fundamentals of an infantry division have generally been decided upon, changes in detail are constantly taking place.

Cavalry.—There are three types of cavalry division to-day: the first entirely mechanized; the second, mechanized reconnaissance units with the mass of the division still horsed; and, thirdly, horse divisions. Russia, with about 23 horse cavalry divisions, has by far the greatest amount of horse cavalry. Germany is the leader in having an independent mechanized force directly under the high command, with a 'Panzer Corps' of at least two mechanized divisions. Russia is reported to have from two to six mechanized divisions, but how far these are actually in being is not known. Great Britain has one independent mobile division consisting of two mechanized brigades, one tank brigade, one infantry battalion, and service troops. The Japanese Kwantung army is motorized and mechanized, but the details are secret. France has one light mechanized division (cavalry) and is organizing another. In Italy, the mechanized forces are under army unit commanders.

In the United States and Japan, the army and navy each have their own air forces. In other countries the air forces are independent of the army and navy, except that in Russia the land forces, air force, and sea forces are all parts of the same organization.

Maginot Line.—In France the construction of the Maginot Line of fortifications along the German border is responsible for two new developments. First, the line itself is not a series of strong detached forts with long intervals of open ground between, as were the old lines from Verdun to Toul and from Epinal to Belfort. Instead, it is a long trench system of the 1914–18 war type, with all the machine-gun nests, battery positions, and observatories in concrete and steel instead of earth and wood, plus an elaborate system of concrete dug-outs and communicating tunnels with gas-proof chambers, kitchens, living quarters, supply and ammunition chambers, and dressing stations for the wounded. In the second place, the officers and many of the troops needed to garrison this line are part of a new special frontier corps permanently quartered alongside their defence sector. The reservists necessary for war strength are the male inhabitants of the neighbouring villages. This corps was brought into existence to prevent the danger of the line being broken through, before the fortifications could be manned, by a surprise attack of a mechanized and motorized force supported by aviation. *See* also WARFARE; MUNITIONS OF WAR; ARMAMENTS, WORLD. (H. J. RE.)

ARMSTRONG, HENRY EDWARD, F.R.S., Ph.D., LL.D., D.Sc., British chemist; born in London, May 6, 1848; died at Lewisham, July 13, 1937. A brief biography is to be found in the *Ency. Brit.*, vol. 2, p. 394. His wife, Frances Louisa, whom he married in 1877, died in 1935.

ART EXHIBITIONS OF 1937.—The prospects of a Coronation Season encouraged a heavy crop of art exhibitions in London. Following the *Jubilee Exhibition of the British School at Athens*, Burlington House opened its doors in January to a retrospective display of *British Architecture* covering the past 336 years, an interesting feature of which was John Nash's original layout for the Regent's Park Estate. At Knoedler's were shown a series of portraits of royal and noble personages by *Winterhalter* (*d.* 1873.) During February, a loan exhibition of *Works by Sir Joshua Reynolds* was held at Sir Philip Sassoon's house in Park Lane. The principal events during April were the *Centenary Exhibitions of John Constable*, at the Tate Gallery, at Wildenstein's and at the British Museum; and the opening by the King of The National Maritime Museum at Greenwich.

The coronation month (May) began with the annual *Royal Academy Exhibition*, and the *Royal Treasures Exhibition*, continued from the previous month. Pictures and relics illustrative of the *Kings and Queens of England* were on view at the Victoria and Albert Museum, a *Coronation Exhibition* was held by the Royal Society of British Artists, and *Modern Painters, mostly French*, were being shown at the Leicester Galleries. A further *Coronation Exhibition* was held at Agnew's. *Gems of Painting* and of *Engraving* were at Sabin's. Works by *Wilson Steer* were seen at Barbizon House, followed by those of *Henry Tonks*, late Slade Professor at University College. On June 29 extensive new sculpture galleries, the gift of Lord Duveen to the Tate Gallery, were opened by the King.

Late in September, the *Antique Dealers' Fair* staged its fourth annual exhibition at Grosvenor House (London), remaining open for three weeks, and *Sea Power* pictures at the New Gallery were introduced by Mr. Winston Churchill. Throughout November 240 works in oil- and water-colour by *Peter de Wint* were shown at Lincoln City.

Later in the year also, a new experiment in presentation was the documented and 'extra-illustrated' exhibition in Paris of works by *Van Gogh* at the Musée de l'Art Moderne.

The seasonal *Salons* in Paris took place as usual, but were somewhat eclipsed by the wonderful display of 1,000 *Masterpieces of French Art* from Gallo-Roman times to the twentieth century at the Musée de l'Art Moderne in the *International Exhibition*. Examples of *Catalonian and Austrian Art* of the nineteenth century were placed on view at the Musée du Jeu de Paume, and, in July, paintings by *El Greco*, nine of them lent by King Carol II of Rumania, were shown at the Galerie des Beaux-Arts. An extensive gathering of modern paintings, drawings, sculpture, and engravings by the *Maîtres de l'Art Indépendant* was to be seen at the Petit Palais. Paintings by *Gauguin* were shown at the Galerie des Beaux-Arts; works by *Turner and Blake* at the Bibliothèque Nationale introduced to the French public certain specialized and individual aspects of British art, and at the Musée des Arts Décoratifs were over 400 drawings by *Constantin Guys*. An important show of *Rubens and his Time* at the Orangerie in Paris was a notable event earlier in the year.

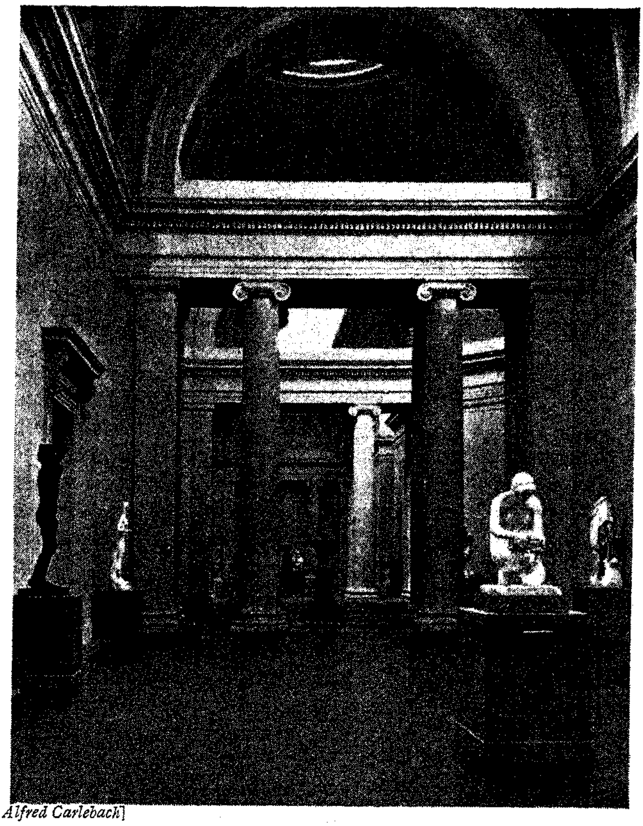
In America, Mr. Jules S. Bache announced his intention to present to the State of New York his house filled with art treasures, one of the finest collections in the U.S.A. This has since been opened to the public. In New York, also, the *Van Gogh* exhibition reopened at the Museum of Modern Art: pictures and prints dealing with *Sport* were shown at the Metropolitan Museum, followed by *The Art of Renoir*; and at Wildenstein's, *Thirty Years of Manet.* At the Pennsylvania Museum 10 new galleries devoted to *French Art* were opened, and 50 paintings by *Guardi* were placed on view at the Springfield Museum of Fine Arts. The Metropolitan Museum of New York celebrated the 200th anniversary of *John Singleton Copley, R.A.*

An important event in the U.S.A. was the gift of the Mellon collection as the nucleus of a National Gallery. The collection includes the Panshanger *Raphael* Madonna (valued at $1,000,000), and works by *Rembrandt, Titian, Reynolds, Velasquez, Gainsborough, Vermeer, Van Dyck, Holbein,* and *Hals.*

Throughout the summer an important exhibition of works by *Frans Hals*, 34 being loaned from America, was held at Haarlem, Holland. (H. G. F.)

ART GALLERIES AND ART MUSEUMS. From the designs of Mr. John Russell Pope, associated with the London architects Messrs. Romaine-Walker and Jenkins, five new halls for sculpture, Lord Duveen's gift to the Tate gallery, were completed in 1937. Architecturally they restore unity to the design of the gallery, and the three largest form a magnificent vista nearly 300ft. in length. The formal opening took place in June.

Another capital to receive a new art museum in 1937 was Paris, where the International Exhibition brought into existence, among other buildings, a Musée d'Art Moderne. This was opened in June, a building in modern style, on the avenue Président Wilson facing the Musée Galliéra and running through to the Seine. The building has two separate parts, joined by a colonnade and sculpture court. The western part is a national museum intended to replace the Luxembourg after the Exhibition. The eastern part is a city museum, an adjunct of the Petit Palais, which it will supplement in the display of the collections of the city of Paris, chiefly formed by purchases from the annual salons since 1875. The International Exhibition also occasioned the complete transformation of the Palais du Trocadero. The central block has been removed, and the two wings redesigned as modern structures in white stone. The west wing will house the famous Musée de Sculpture Comparée, the east the Musée d'Ethnographie and a new museum of French folklore.



Alfred Carlebach]
THE NEW SCULPTURE GALLERY OF THE TATE GALLERY, MILLBANK, LONDON

In the new year of 1937, the United States Government was offered the Mellon collection, valued around $20 millions, a building for it to cost about $10 millions, and an adequate endowment for staff and growth. This *étrenne*, which promises to amount to some $50 millions was accompanied by a number of conditions, all of which proved acceptable, and subsequent legislation consummated the gift. The new museum is to be called the National Gallery of Art, and, as an autonomous unit of the Smithsonian Institution, to be located on the Mall in Washington. While the works of art of the Mellon collection form already a substantial nucleus, the gallery will be of greater importance because of the opportunity for growth afforded by its endowment and by its claim on government support. The most interesting of Mr. Mellon's conditions was that new acquisitions be kept to the standard of quality of the donor's collection. He also stipulated that John Russell Pope be architect of the building and before Mr. Pope's death on Aug. 28 (following Mr. Mellon's on Aug. 26), the architect's plans were sufficiently advanced for the condition to be met.

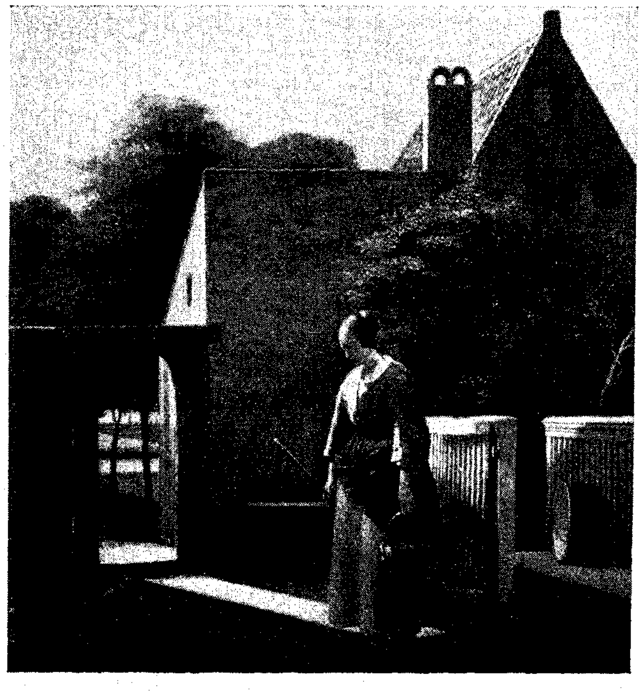
While the development of museums in the world's capitals is conspicuous, it is perhaps less significant than the ubiquitous museum activity in remote parts of the world. Some of this activity is as peripheral in character as it is in geography, and more new ideas may come from it because of its variety. The publication, delayed until 1937, of the sixth volume, *India*, completed the Museums Directory (of the British Empire), published by the Museums Association, London, and caused a great deal of comment. First, because the world in general was oblivious of the 105 museums in India; second, the problems of a museum are novel in a country where literacy is not regarded as a panacea; third, the whole status of museums is in question, where 90 per cent. of the population are not urban and where there are 3 million inhabitants per museum—in contrast to the 48,000 per museum in Norway. As with regard to so many other matters, India offers, in connexion with museums, its usual challenge to western civilization.

The report in the spring of 1937 of the Empire Grants Committee, which since 1934 had made 25 grants (the money for which was given by the Carnegie Corporation of New York) totalling about £11,000, brought to public attention many almost unknown museums scattered through British possessions, from the Fiji islands to the

Falklands, and from Bermuda to Zanzibar. Even in England it is notable that the most important new museum of 1937 is not in London but at Sheffield, where the City museum was opened in April. Combined with it is an extension to the Mappin Art gallery. The former provides a dignified home for the Sheffield collections of cutlery, metalwork, pottery, silver, etc.; the latter contains some 300 objects from the art collection of Alderman Graves, who had already given to Sheffield the Graves Art gallery opened in 1934.

In the United States, while there has been growth at many of the great art museums, such as the wing added to the Cincinnati museum, the ten new galleries for French art opened at the Pennsylvania museum, and the new wing of the Baltimore museum, the year 1937 has been characterized also by the museum activity of remote districts. Two of the smallest of the State universities, Maine and Montana, have undertaken the building of art galleries (other new museums are at the University of North Carolina and the University of Colorado), and the lesser cities have been the ones to acquire museums during the year, such as Little Rock, Ark.; Syracuse, N.Y.; and Grand Rapids, Mich. (for furniture). The inevitable result of taxation in America is to cause the large private collections to become public property. In 1937, two such transfers occurred—the collections of the late John Ringling at Sarasota, Fla., and of Jules Bache in New York.

ART SALES. For various reasons the most important continental and many American sales in 1937 were staged in London. In April, 43 pictures, owned by Capt C. N. F. Loyd, mainly Dutch, were sold at Christie's for £53,487. On April 19, the sale of the extensive Rothschild collections at 148 Piccadilly was undertaken by Messrs. Sotheby. Twenty pictures were sold for £23,000, including £17,500 for a work by De Hooch, the highest price of the year. The continental and English plate realized over £40,000, and with the remaining objects the total achieved was £125,000. This marked the season's culmination. At a sale of armour at Sotheby's, the funeral helm of Henry VI was acquired for St. George's Chapel, Windsor. In New York, at the American Art Association Anderson Galleries, a record was made by the sale of a silver monteith by John Coney of Boston (1655–1722) at $30,000, and, also in April, the Hubert Lawton collections, American furniture, pictures, etc., realized $93,000.



A DUTCH COURTYARD, BY PIETER DE HOOCH, SOLD AT SOTHEBY'S FOR £17,500

At Christie's in May, 120 pictures from the Leonard Gow collection reached a total of £43,000, while at the same rooms 140 lots of silver fetched over £17,000, including a parcel-gilt tankard, sent by Lord Rochdale (£1,950). In New York, the colossal assemblage of works of art forming the Brady Collections were sold for $471,000 (American Art Association Anderson Galleries).

In June, Julius Böhler, under instructions from the Berlin State Museums, undertook a sale of 'superfluities and duplicates' at Munich; 770 objects of art were parted with for £25,000.

At a sale of pictures totalling £47,000 on July 2 at Christie's, £12,500 were given for 23 drawings by Turner, from Farnley Hall. At Christie's also, in a silver sale which yielded £13,030, the mace of the Irish House of Commons (1765–1801) was purchased by the Bank of Ireland for £3,100. At Christie's, again in July, eight paintings of Canaletto from the Earl of Lovelace realized £11,030. Paintings, the property of the late T. S. Pearson Gregory, included five overdoor panels by Boucher, which reached the unexpected sum of £23,000, and £14,000 resulted from the sale of Sir Leicester Harmsworth's pictures. July also saw the dispersal at Sotheby's of the W. F. van Heukelom (Amsterdam) collection of Chinese porcelain, which attained nearly £15,000. On the 22nd, the famous Greffuhle collections from Paris (pictures and works of art) achieved £62,300, which included a drawing by Watteau, £5,800. In October, Messrs. Christie sold the remaining contents of the Clumber mansion and gardens on the premises for about £11,500. It was in this month also that the Trustees of the National Gallery bought four small newly discovered paintings of Giorgione.

The re-opening of the season in November saw the dispersal of the Guilhou collection of rings, sent from Paris, a four days' sale at Sotheby's resulting in £15,000. The Martin Erdmann mezzotints, sent to Christie's from New York, brought £17,234, with other articles totalling £31,364. English silver, the property of an American collector, yielded £21,664 at Sotheby's on Nov. 15. (*See* also BOOK SALES.) (H. G. F.)

ARTHRITIS: *see* RHEUMATISM AND RHEUMATOID ARTHRITIS.

ARTIFICIAL SILK: *see* RAYON.

ASCENSION ISLAND: *see* ST. HELENA AND ASCENSION ISLAND.

ASHANTI: *see* GOLD COAST.

ASHTON, ALGERNON BENNET LANGTON. British musical composer; born at Durham, Dec. 9, 1859; died in London, April 10, 1937. He lived at Leipzig from the age of 3 to that of 20, and studied music there under, among others, Franz Heinig, Karl Reinecke, and E. F. Richter, and later at Frankfort under Joachim Raff. After having returned to England, he was professor of the pianoforte at the Royal College of Music from 1885 to 1910, and from 1913 to 1935 was on the staff of the London College of Music. He published a very considerable amount of music, much of which is of a high quality; but was more in the public eye as a prolific writer of letters to the Press. In 1909 he married Ethel Clara Hall, and he had one son.

ASSAM. This province, in the far north-east corner of India, has an area of 55,014sq.m. Its population is

8,622,251; of whom 57 per cent. are Hindus and 32 per cent. Moslems, while over 8 per cent. are classed as tribal or Animists. The capital is Shillong, a small hill-station; and the only towns of any importance are Gauhati (pop. 21,797) and Sylhet (pop. 21,435), in the Brahmaputra and Surma valleys respectively. Bengali is the mother-tongue of about four millions of the inhabitants, Assamese of nearly two millions; and there is much diversity of frontier languages in isolated areas. Literacy varies greatly from the valleys to the hills, the average being one man in eight, and one woman in 55, who can read their own vernaculars. There are six colleges, however, and over 6,000 schools, at which about 4 per cent. of the population are receiving instruction.

There are 12 districts, under a governor (Sir Robert Reid, since March 1937); and there is a legislature of two chambers, with 22 seats in the upper house and 108 in the assembly. The Congress Party failed to secure a majority as a result of the elections. The cabinet at present consists of five ministers.

Assam is the home of the tea industry, 430,000 acres being cultivated for the purpose, and about 900,000 immigrant workers from other parts of India being domiciled on the gardens. But in actual area, rice is by far the leading crop, occupying nearly five million acres; and a certain amount of jute, tobacco, cotton, and rubber is produced. Some coal is raised for local consumption; and there is an old oilfield in the Lakhimpur district, yielding over 50 million gallons of petroleum. Assam boasts of the wettest spot on earth, Cherrapunji, where the annual rainfall is usually well over 400in.

Included in the province are the Manipur and Khasi States; area, about 12,300sq.m., and population about 636,000. (ME.)

ASSASSINATIONS. A list of assassinations, actual or attempted, during 1937 includes:

Feb. 4. General Wang I-chey, Shensi province, China, assassinated by mutineers.

July 14. Lisbon, Portugal. Attempted assassination of the prime minister, Antonio de Oliveria Salazar, by bomb. Statesman unhurt.

July 18. Warsaw, Poland. Attempt to bomb Colonel Adam Koc, politician. Assassin killed.

Aug. 12. Baghdad. General Baqir Sidqi, dictator of Iraq, assassinated by soldier. Major Mohammed Ali Jawdat, commander of Iraq's air force, also killed.

Sept. 26. Nazareth. Lewis Yelland Andrews, district commissioner of Galilee, and his bodyguard, Constable Peter R. McEwan, shot and killed.

Oct. 12. Beirut, Syria. United States consul-general, James Theodore Marriner, killed by a demented Armenian.

Nov. 28. Heliopolis, Egypt. Attempted assassination of Nahas Pasha, premier of Egypt, by a young anti-Wafdist, a grandson of Arabi Pasha. Nahas Pasha was unhurt.

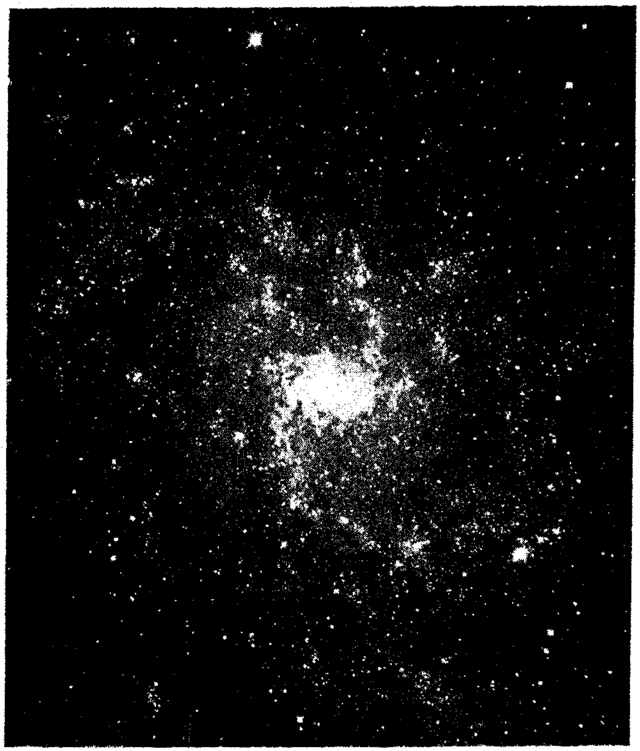
ASTRONOMY. In astronomy, probably more than in other sciences, a large proportion of the year's work is of a routine character. Examples of such work are: cataloguing stars according to position in the sky and recording their apparent magnitudes, spectral types, proper motions, and determining their parallaxes; systematic observations of variable stars; observation of motions of the solar system; recording solar activity; making surveys of extra-galactic nebulae. Further, extensive mathematical and physical investigations are carried out as necessary preliminaries to forming theories of astronomical phenomena. So the results about to be described, selected for their representative or novel character, are immediate fruits of only a fraction of the year's activities.

Before giving these results, we may instance just one of the modes of investigation of recent growth, which is leading to new astronomical discoveries. Since our knowledge of celestial objects is derived almost exclusively from the radiation they transmit to us, advances in this knowledge depend on increasingly refined study of this radiation. A recent refinement is the study of line profiles, a highly technical investigation of the minute detail in the structure of absorption and emission lines in astronomical spectra. It is now understood how nearly all the physical circumstances of a star's atmosphere influence the profiles of the lines in its spectrum; thence very accurate knowledge of the surface layers of stars is being obtained. Similar methods are applied to the study of gaseous nebulae and interstellar matter, and even planetary atmospheres.

Solar System.—*The Sun.*—This has been a year of great solar activity, as was to be expected, since a sunspot maximum in the eleven-year solar cycle occurs early in 1938. Some sunspot groups in recent months were amongst the largest ever recorded. An important discovery has been made concerning bright solar eruptions. These consist in a sudden ejection and subsequent dispersal of intensely luminous gas, probably mainly hydrogen, from small areas of the sun's surface, usually near sunspots, the whole phenomenon lasting on the average about twenty minutes. It is found that sudden radio fadings on the sunlit side of the earth frequently occur at the same time as these eruptions, and are of similar duration. It appears therefore that these small parts of the sun's atmosphere emit some kind of radiation, travelling with the velocity of light, which profoundly affects the state of the earth's ionosphere. Incidentally, it has also been discovered that the ionosphere may be influenced by the entry of a meteoric shower.

Motion pictures have now found a place in astronomy, having been successfully made at the 1936 and 1937 solar eclipses, and also during the year many astronomers have seen the films made at the McMath-Hulbert Observatory of various types of solar prominences 'in action'. Colour photographs have also been made at recent eclipses.

The solar eclipse of June 8, 1937, gave the longest period of totality, over seven minutes at noon-point, of any eclipse since A.D. 699. Unfortunately its track lay almost entirely over the Pacific Ocean. However, it was successfully observed from Canton Island, in the Phoenix group, by New Zealand and U.S. expeditions, and from Peru, shortly before sunset, by Japanese, S. American, and U.S. astronomers. The corona was of the form characteristic of spot-maximum, and estimates of its total light vary from 0·5 to 1·5 times that of full-moon. Dr. Dunham announced the discovery of new lines of unknown origin in the blue region of its spectrum. Much curiosity was aroused by reports that photographs taken by Major Stevens from an aeroplane in Peru, at a height of 25,000ft. showed a 'globular' corona much more extensive than that photographed through the earth's lower atmosphere. This is taken to confirm the view already held by astronomers, that the coronal 'streamers', usually featuring prominently in photographs, do not constitute the whole corona, which consists in addition of a more uniform envelope extending



SPIRAL NEBULA M33 IN TRIANGULUM (RITCHEY). THE MILKY WAY, SEEN FROM OUTER SPACE, WOULD VERY POSSIBLY PRESENT A SIMILAR APPEARANCE

round the sun to a height greater than that to which the streamers are visible.

Dr. B. Lyot made a great advance in 1931 by photographing the corona, from the Pic du Midi, without an eclipse. This year he published new results of such observations, including the profiles (*see* above) of the emission lines in the coronal spectrum, the only important lines in astronomical spectra whose origin is still unknown.

Planets.—Recent redeterminations of the moon's motion have enabled Dr. Harold Jeffreys and Dr. Spencer Jones to recalculate the figures of the earth and moon. They find for the reciprocal of the earth's ellipticity (the ratio of the difference between the equatorial and polar diameters to the equatorial diameter) values 297·19 ± 0·52 and 296·08 ± 0·95 respectively. Jeffreys finds the moon to be of nearly homogeneous density, and that the high values he obtains for its ellipticity cannot be explained if it be supposed to have solidified when keeping the same face to the earth, but could be explained if it was rotating in about three and a half days when solidification occurred.

Comets.—This year has seen the thirty-ninth reapparition of Encke's comet since its discovery in 1786. Comet 1937f (Finsler) reached a brightness of fourth magnitude in August, so could be seen with the naked eye. It developed a tail, extending over more than 20° of the sky, which showed rapid variations in structure.

Dr. Robertson has recalculated the retardation experienced by a particle moving round the sun, due to the radiation field, this being analogous to the drag on a body moving through falling rain. The effect is not great enough to account for certain unexplained peculiarities in cometary motion, but is important in precluding the continued existence of certain resisting media sometimes supposed present in the solar system.

Stars.—*Special Stars.*—A star of peculiar interest is ζ Aurigae. It is an eclipsing binary star, of which the components are a red super-giant K-type star, whose radius is about 300 solar radii, and a normal B-type star, whose radius is between two and three solar radii. At the beginning and end of the eclipse the light of the B-star reaches us through the atmosphere of its companion, the depth of this atmosphere being of the order of one-quarter the K-star's radius. The analysis of the observations makes possible for the first time a measurement of the structural details of the outer atmosphere of a star other than the sun. The period is 972 days; an eclipse occurred this year, commencing April 21, numerous observations being made. An interesting preliminary result is that the whole eclipse lasted about 13 hours longer than the preceding one (1934), probably indicating that the depth of the K-star's atmosphere was about 1 per cent. greater in 1937 than in 1934.

No notable ordinary novae were discovered during the year, but observations continue to be made on those of recent years. Nova Herculis 1934 evidently split into two components during its outburst, and this year's observations show that the distance between the components is increasing at an approximately constant rate.

A significant result now being established is that there are apparently two classes of novae, ordinary novae and super novae. The former at maximum generally reach an absolute brightness from 10,000 to 100,000 times that of the sun, while the latter appear to reach a brightness from 10 to 100 million times that of the sun, or even more. They are the only individual stars which can be seen up to about the greatest distance to which extra-galactic nebulae can be observed. It is estimated that, in any one galaxy, about 30 ordinary novae appear annually, while a super nova occurs on an average only once in several centuries. 'Tycho's star' of 1572, which could be seen in daylight, was probably one in our own galaxy. Dr. Zwicky has instituted a systematic search for these objects, and already, in August and September (1937), has found two. The former is in the nebula in Canes Venatici, and its spectrum was secured. The estimated absolute brightness (— 16 magnitudes) of the latter, when first observed, made it the most luminous known celestial object, considerably exceeding the total brightness of the nebula (N.G.C. 1003) in which it occurs.

Stellar Structure.—Astronomers are still attacking the problem of the source of energy-generation in stellar interiors, having regard to the latest laboratory data on atomic transmutations. The theory, current a few years ago, that stellar energy is produced by the annihilation of atoms, has now given place to the idea that it is produced by the building up of heavy atomic nuclei out of lighter ones. This process results, as is well known, in a net loss of mass whose energy-equivalent must ultimately reappear as radiation. It is supposed that a star commences its life as a mass of pure hydrogen; collisions between its atoms produce firstly neutrons and then the nuclei of light elements, notably helium; these in turn act as catalysts in building up heavier atomic nuclei. It is calculated that these processes would liberate sufficient energy to maintain the sun's radiation at its present rate for 3×10^{11} years, which on the whole fits in with other estimates of the age of the stars.

The Galactic System.—Fresh data appear to demand no fundamental revision of the general ideas of the structure and motion of the galactic stellar system sketched some years ago by Shapley and Oort, respectively. Professor B. J. Bok, summarizing our present knowledge, endorses

Seare's suggestion that, seen from outer space, the Milky Way very possibly would look like the spiral nebula in Triangulum (*see* illustration); our sun would be in one of the spiral knots about two-thirds of the way from the centre of the nebula to its edge. It would be seen to possess a central layer of obscuring material, about 500 parsecs thick. Current studies of galactic nebulae, zodiacal light, the 'fixed' calcium and sodium lines, and the absorption of light in space, are revealing the nature of this material, showing it to consist partly of atoms and partly of dust particles. This year evidence of the presence of molecules has also emerged.

Extra-galactic Nebulae.—As examples of the magnitude of current investigations of extra-galactic nebulae, or 'island universes', one may cite the publication of surveys by Hubble (end of 1936) of over 8,000 of these objects down to apparent photographic magnitude 21 (*i.e.* to a distance of over 300 million light-years), using the Mt. Wilson 100-in. reflector, and by Shapley of 36,000 southern galaxies, and of a theoretical study by Holmberg of 827 double and multiple galaxies. Also individual galaxies receive particular attention; *e.g.* Redman and Shirley's photometric study of the Andromeda nebula leads them to conclude that extra-galactic nebulae are more extensive than had been thought, and tends to dispel the idea that our own galaxy, while similar in structure to other spiral nebulae, may be above the average in size.

All such work is directed to discovering the large-scale structure of the universe. Surveys like those mentioned indicate that, to a first approximation, the galaxies show a statistically uniform distribution throughout the space accessible to existing telescopes. A second approximation indicates a small departure from this, if the classical properties of space be assumed, while it is well known that the spectral lines of these nebulae show a red-ward displacement. These features are usually explained either by means of one of the general relativity models of the 'expanding universe', which pictures the nebulae as embedded in expanding curved space, or by means of Milne's kinematical relativity, which pictures them as a dispersing cloud of 'equivalent particles'. Hubble, however, inclines to the view that the simple interpretation of the red-shifts as due to recessional velocities leads to untenable conclusions about the size of the universe and the density of matter in it. Most astronomers probably prefer to suspend judgment until yet more extensive data are available.

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(W. H. McC.)

ATHLETICS. The match between U.S.A. and Europe, which was looked forward to as a feature of the Paris Exhibition of 1937, did not mature. Its place was taken by the World Student Championships, which resulted as follows: Germany, 126 points; England, 107½; France, 40; Hungary, 27; Estonia, 26½; Scotland, 26. Had the English and Scottish teams been combined as in previous years, Great Britain would have scored an easy victory. England won all the flat events, with C. B. Holmes, in the sprints, and J. W. L. Alford, in the middle distances, securing double victories. A. G. K. Brown equalled the 400-metres record of 47·8secs., and F. R. Webster, the first British athlete to win a field event at these games, took the pole vault at 12ft. 8½ins.

At the Inter-University Sports, Cambridge defeated Oxford by nine events to two, records being made by A. Irfan (C.) in the shot put, 49ft. 3¾ins., and A. G. K. Brown (C.), 440yds. in 48·4secs. Cambridge, scoring 80 points to Oxford's 66 and London's 63, also won the Championship of the British Universities. In the relay races, run on Nov. 27, Oxford beat Cambridge by four events to three. On tour in the U.S.A. and Canada, the combined Oxford and Cambridge team defeated Harvard and Yale and the Canadian teams. Notable features were: A. E. Pennington's sprint double against Harvard and Yale, and his 220-yds. record of 21·3secs.; A. G. K. Brown's 440- and 880-yds. double, with 440-yds. record of 47·7secs.; and C. A. J. Emery's mile in 4mins. 13·8secs. In the match versus Princeton and Cornell, Brown and Pennington again produced doubles; Irfan and Kennedy (C.) made new meet records for the shot, 47ft. 7ins., and high jump, 6ft. 3⅛ins.; while Webster (C.), clearing 13ft., beat the American Intercollegiate champion, Medina, in the pole vault. Perina, Princeton, made a new broad jump record of 24ft. 7⅛ins.

A welcome feature of the European year was the many more international obligations accepted by Great Britain. In her two principal fixtures, Great Britain defeated France by 66 points to 54 and Germany by 69 points to 67. In September an under-strength British team toured Scandinavia, and was defeated by Finland, 92 points to 67, and by Norway, 74 points to 65. During this tour, D. O. Finlay (G.B.), equalled the world's 110-metres hurdles record of 14·1secs.

Sweden achieved a notable victory over Germany, 107 points to 101, and also beat Hungary. Germany had the distinction, on Aug. 15, of defeating, in separate matches, Belgium, 112 to 74; Denmark, 104 to 76; Czechoslovakia, 129 to 79; Austria, 118 to 77; Poland, 96 to 72; and Switzerland 90 to 68.

A survey of the positions of the European nations shows Denmark to be undistinguished, except for Larsen's pole vault of 13ft. 4ins. Estonia has two good men in Sule, who has thrown the javelin 233ft., and Kreek, a 51-ft. shot putter. Poland has in Schneider a 13-ft. pole vaulter, and in Gierutto a 51-ft. shot putter, while Kucharski ran 800 metres in 1min. 52·4secs. and 1,500 metres in 3 mins. 58·5secs.

In Central Europe, Czechoslovakia has made little progress, save for her 172-ft. hammer thrower, Knotek. Austrian athletes are improving, and Proksch, clearing 13ft. 6ins., is the best European pole vaulter of the year. Switzerland's reputation still depends upon Haenni, who beat the American negro, Ben Johnson, at 100 metres in 10·4secs. and 200 metres in 21·3secs. The Hungarians are very good. Their best man, Szabo, has made a world's 2-miles record of 8mins. 56secs. Gynes, the sprinter, and Kelen, who ran 10,000 metres in 31mins. 17secs., are in the top class, while Kovac's 53·4secs. for the 400-metres hurdles was only equalled during 1937 by Hoelling of Germany. Zsuffka pole-vaulted 13ft. 4ins., and Varszegi threw the javelin 231ft.

Greece won the Balkan Games with 120 points from Rumania 104, Yugoslavia 69, Turkey 26, and Bulgaria 11.

Italy has great athletes in Lanzi, who returned 1min. 55secs. for an 800-metres European record, while Beccali covered 1,500 metres in 3mins. 51·2secs., which is about ⅕sec. slower than the world's mile record of 4mins. 6·4secs., made by S. C. Wooderson (England). Mariani has 10·4secs. for 100 metres, Caldana 14·8 secs. for 110-metres hurdles, while Maffei's long jump of over 25ft. has only been bettered in Europe by Long of Germany. Holland has first-class sprinters in Osendarp and van Beveren, while P. O'Callaghan (Ireland), has thrown the 16-lbs. hammer 198ft. 8·6ins.

The Finns are as remarkable as ever. Matti Jarvinen threw the javelin 250ft. 10·6ins.; Maeki, returning 14mins. 28·8secs., narrowly beat P. Ward (Great Britain) in the 5,000 metres; and the veteran, Sjoestedt, returned 14·3secs. for the 110-metres hurdles. Germany had three outstanding men in Hein, who made a new national hammer-throwing record of 187ft. 8·8ins., Woellke, who made a new British shot-putting record of 52ft. 5ins., and Harbig, who established German records at 400 and 800 metres in 47·6secs. and 1min. 50·9secs. respectively.

Outstanding performances in Great Britain were the ½-mile records of A. J. Collyer, 1min. 53·1secs., and F. R. Handley, 1min. 52·9secs.; S. C. Wooderson's 1-mile world record, 4mins. 6·4secs.; D. O. Finlay's high hurdles record of 14·5secs.; S. Wilson's javelin record, 194ft. 2ins.; and F. R. Webster's indoor pole vault record, 12ft. 9½ins.

(F. A. M. W.)

The United States had its best year from the standpoint of performances, interest, attendance, and numbers engaged. In the National A.A.U. championships, Feb. 27, three new indoor records were established, and seven winners of the previous year successfully defended their titles in a meet which took on an international flavour because of the presence of athletes from Japan, Italy, Hungary, and Canada. In the running events, Tommy Deckard, of the University of Indiana, won by racing to a new indoor record for the 3,000-metres steeplechase championship in 8mins. 48·6secs. Norman Bright, of the Olympic Club of San Francisco, set up another American record when he won the 5,000-metres championship in 14mins. 45·8secs. Two of the star performers in the field events were Sam Richardson, of the Achilles Club of Toronto, whose running broad jump of 24ft. 7⅜ins. enabled him to repeat his victory of 1936 and become the only non-American to win a title, and, in high jumping, Edward Burke, of Marquette University, who cleared 6ft. 9¼ins. During the outdoor National A.A.U. championships, at Marquette University stadium, Milwaukee, July 3, many of the American athletes of the Olympic Games in Berlin were turned back by a rush of newcomers. In 21 individual titles, only one of five Olympic winners attained top honours. He was John Woodruff, the tall negro representing the University of Pittsburgh, who showed his heels to a fast field in the 800-metres run, in 1min. 50secs. Seven others who had not scored at Berlin came through to victory at Marquette; the performances of the winners of 14 events were the best ever turned in at a national championship meet, and three of them bettered the existing American records.

To name but a few of the highlights, Jack Weiershauser, Olympic Club, San Francisco, ran 200 metres around a turn in 20·9secs., only two-tenths of a second behind Owens' world record; Ray Malott, Olympic Club, raced to victory in the 400-metres event, in 47·1secs. Only three other Americans have ever thrown the javelin farther than Bill Reitz, S.C.S.A., who tossed it 224ft. Jack Patterson, of Rice Institute, went over the 400-metres low hurdles in 52·3secs.

Among the outstanding track and field achievements in the United States in 1937 were: Elroy Robinson, Olympic Club, 880yds. and 800 metres, 1min. 49·6secs.; Earle Meadows and William Sefton, Southern California, pole vault, 14ft. 11ins.; Glenn Cunningham, N.Y. Curb Exchange, three-quarters of a mile, 3mins. 0·8sec., and one and a half miles, 6mins. 34secs.; Donald Lash, Indiana, two miles (indoors), 8mins. 58secs.; Edward O'Brien, Syracuse University, 500yds. (indoors) 57·6secs.; George Varoff, Oregon, pole vault (indoors), 14ft. 4⅞ins.; Edward Burke, Marquette, high jump (indoors), 6ft. 9¼ins.; Spec Towns, Georgia, 110 metres and 120 yards high hurdles, 14·1secs.

There were 41 sectional groups of the A.A.U., headed by the Metropolitan, having a total of 1,626 competing organizations, in which 50,384 amateur athletes are registered. Other championship events included the junior national and sectional title events, the women's senior track and field championships, the national championships at 15, 20, 25, and 30 kilometres, the marathon and cross-country championships, the national pentathlon championship, the walking championships at 7 miles, 30,000 metres, and 50,000 metres. These events are exclusive of the I.C.A.A.A.A. track and field championships, indoors and outdoors, the Penn Relays, the Drake Relays, the Pan-American Exposition Games at Dallas, Texas, and the annual Sugar Bowl games at New Orleans, La. Frequent dual track and field meets and triangle meets are held outdoors between the colleges, as well as the annual Princeton Track Meet in May, which features the headliners in a programme of six events. The largest club meets outdoors are the spring and fall games sponsored by the New York Athletic Club at its country home at Travers Island, N.Y.

New records were set up in the I.C.A.A.A.A. championships by Benjamin Johnson, Columbia, 60-yds. dash, 6·3secs., and running broad jump, 24ft. 0⅛in.; Edward T. O'Brien, Syracuse, 600yds. 1min. 13·1secs.; John M. Donovan, Dartmouth, 60-yards high hurdles, 7·5secs., made in the semi-finals, and won by Donovan in 7·6secs.; Dimitri N. Zaltz, Boston college, and Daniel Taylor, Columbia, tied for a new championship record in the 16-lb. shot put, 50ft. 9⅝ins. The championship trophy was won by Columbia with $34\frac{5}{14}$ points.

New York's system of track and field training for its public school students probably is unexcelled in the world. It is under the direction of the Public Schools Athletic League, which organizes championship games for students in its 127 grammar and 34 high schools. In the latter, the times are but a fraction of a second behind college performances; for instance, 50yds., 6secs.; 70yds., 8secs.; 75yds., 8·1secs.; 100yds., 10·1secs., all made indoors.

World's Best Track and Field Performvnces of 1937

100 *Yards*

s.	
9·6	Robinson, U.S.A.
9·6	Stroller, U.S.A.
9·6	Clifford, U.S.A.
9·6	Collier, U.S.A.
9·6	Davis, U.S.A.

100 *Metres*

s.	
10·4	Walker, U.S.A.
10·4	Gyenes, Hungary
10·4	Hornberger, Germany
10·4	Osendarp, Holland
10·4	Sweeney, England

220 *Yards*

s.	
20·7	Weiershauser, U.S.A.
20·7	Carter, U.S.A.
20·7	Mills, U.S.A.
20·8	Orr, Canada
20·8	Rodenkirchen, U.S.A.

400 *Metres and* 440 *Yards*

s.	
46·9	Benke, U.S.A.
47·0	Woodruff, U.S.A.
47·1	Malott, U.S.A.
*47·1	Shore, South Africa
*47·1	Young, U.S.A.

800 *Metres and* 880 *Yards*

m. s.	
1 49·6	Robinson, U.S.A.
*1 50·0	Woodruff, U.S.A.
*1 50·5	Lanzi, Italy
*1 50·7	Borck, U.S.A.
*1 50·9	Harbig, Germany

1,500 *Metres*

m. s.	
3 50·3	San Romani, U.S.A.
3 51·0	Wooderson, England
3 51·2	Beccali, Italy
3 51·4	Jonsson, Sweden
3 51·8	Cunningham, U.S.A.

* Metres

One Mile

m. s.
4 6·6—Wooderson, England
4 7·2—San Romani, U.S.A.
4 7·2—Lash, U.S.A.
4 7·4—Cunningham, U.S.A.
4 8·8—Jonsson, Sweden

Two Miles

m. s.
8 56·0—Szabo, Hungary
8 57·4—Hoeckert, Finland
9 13·3—Lash, U.S.A.
9 14·2—Rice, U.S.A.
9 19·9—Lochner, U.S.A.

3,000 *Metres*

m. s.
8 15·8—Jonsson, Sweden
8 17·8—Szabo, Hungary
8 19·1—Pekuri, Finland
8 24·5—Maki, Finland
8 25·4—Kurki, Finland

5,000 *Metres*

m. s.
14 28·8—Maki, Finland
14 30·0—Askola, Finland
14 31·1—Kurki, Finland
14 32·4—Salminen, Finland
14 33·8—Szabo, Hungary

10,000 *Metres*

m. s.
30 5·5—Salminen, Dinland
30 15·0—Lehtinen, Finland
30 32·0—Murakoso, Japan
30 34·2—Askola, Finland
30 49·3—Tamila, Finland

110-*Metres and* 120-*Yards Hurdles*

s.
14·0—Osgood, U.S.A.
*14·2—Staley, U.S.A.
14·3—Tolmich, U.S.A.
14·3—Towns, U.S.A.
*14·3—Sjoestedt, Finland

200-*Metres and* 220-*Yards Hurdles*

s.
23·2—Weiershauser, U.S.A.
23·2—Hucker, U.S.A.
23·3—Vickery, U.S.A.
*23·3—Tolmich, U.S.A.
23·4—Cardwell, U.S.A.

400-*Metres Hurdles*

s.
52·2—Benke, U.S.A.
52·2—Gonzales, Argentina
52·3—Patterson, U.S.A.
53·3—Hoelling, Germany
53·6—Scheele, Germany

High Jump

ft. in.
6 10⅜—Walker, U.S.A.
6 8⅝—Albritton, U.S.A.
6 7⅛—Johnson, U.S.A.
6 7⅛—Kovtoun, U.S.S.R.
6 7—Vickery, U.S.A.

Broad Jump

ft. in.
25 11—Long, Germany
25 10¼—King, U.S.A.
25 5½—Robinson, U.S.A.
25 4⅜—Brooks, U.S.A.
25 3—Nutting, U.S.A.

Hop, Step, and Jump

ft. in.
50 7⅞—Togami, Japan
50 2—Reccius, Chile
50 1⅞—Rajasari, Finland
49 11⅕—Ilovaara, Finland
49 7⅜—Luoma, Finland

Pole Vault

ft. in.
14 11—Sefton, U.S.A.
14 11—Meadows, U.S.A.
14 7⅝—Varoff, U.S.A.
14 7⅝—Warmerdam, U.S.A.
14 4—Mauger, U.S.A.
14 3¼—Ohe, Japan

Discus Throw

ft. in.
169 2¼—Sorlie, Norway
168 7—Pritchard, U.S.A.
168 2½—Kotkas, Finland
165 8⅛—Oberwager, Italy
165 5⅘—Schroeder, Germany

Javelin Throw

ft. in.
250 10⅝—Jarvinen, Finland
245 4½—Nikkanen, Finland
235 0⅞—Atterval, Sweden
231 2⅘—Issak, Estonia
230 10—Sule, Estonia

16-*lb. Shot Put*

ft. in.
53 6—Francis, U.S.A.
53 4⅛—Woellke, Germany
52 10¼—Watson, U.S.A.
52 7⅝—Reynolds, U.S.A.
52 2⅛—Zaitz, U.S.A.

16-*lb. Hammer Throw*

ft. in.
198 8⅝—O'Callaghan, Ireland
185 11½—Hein, Germany
179 3⅞—Blask, Germany
179 2⅞—Folwartshny, U.S.A
178 $7\frac{3}{10}$—Lutz, Germany

* Metres

ATHLETICS, WOMEN IN. The high standard set by women in athletics at the Olympic Games, 1936, was well maintained in 1937.

European rankings in officially recognized track and field events were :

100 Metres.—Walasiewicz (Poland), 11·6secs. ; Krauss (Germany), 11·9secs. ; Cook (England), Jeffreys (England), and Winkels (Germany), 12secs.

200 Metres.—Saunders (England), 24·8secs. ; Chalmers (England), 24·9secs. ; Koen (Holland), 25secs. ; Stokes (England), 25·1secs. ; Testoni (Italy), 25·2secs. ; Vretman (Sweden) and Krauss (Germany), 25·3secs.

Broad Jump.—Walasiewicz (Poland), 19ft. 9ins. ; Krauss (Germany), 19ft. 6½ins. ; Raby (England), 19ft. ; Franke (Germany), 18ft. 8·8ins. ; Goppner (Germany), 18ft. 8ins. ; Testoni (Italy), 18ft. 6·4ins.

High Jump.—Ratjen (Germany), 5ft. 5ins. ; Odam (England), 5ft. 4⅝ins. ; Csak (Hungary), 5ft. 4·2ins. ; Kaun (Germany), Gardner (England), and Solms (Germany), 5ft. 3ins. The Olympic Women's High Jump was won at 5ft. 3ins. in 1936.

Discus.—Mauermayer (Germany), 147ft. 11·6ins. ; Hagemann (Germany), 142ft. 1·1in. ; Volkhausen (Germany), 138ft. 9ins. ; Weiss (Poland), 135ft. 5·6ins. ; Lundstrom (Sweden), 133ft. 8ins. ; Sommer (Germany), 132ft. 7·3ins. ; Niessing (Holland), 132ft. 6·5ins.

Javelin.—Doge (Germany), 143ft. 7·2ins. ; Kruger (Germany), 143ft. 3·7ins. ; Eberhardt (Germany), 143ft. 2·5ins. ; Pekarova (Czechoslovakia), 142ft. 8·2ins. ; Gelius (Germany), 142ft. 5ins. ; Schumann (Germany), 142ft. 2·7ins. ; Bauma (Austria), 141ft. 11·1ins.

80 Metres Hurdles.—Burke (England), 11·6secs. ; Dempe and Eckert (Germany), 11·7secs. ; Valla (Italy) and Steuer (Germany), 11·8secs. ; Spitzweg (Germany), 11·9secs. ; Tiffen (England), Doorgeest (Holland), and five German women all returned 12secs.

Shot Put.—Germany excelled also in the Shot Put, Schroder and Weffel being equal first with 42ft. 9·4ins., followed by Mauermayer, 42ft. 3ins., and Kirschoff, 41ft. 10ins. Four other German women beat 40ft.

An outstanding athlete of the year was G. A. Lunn (England), who in her twelfth season of competition won the English javelin, 800 metres and 1 mile titles, the latter event in the record time of 5mins. 17secs. (F. A. M. W.)

ATMOSPHERE, THE. The gaseous envelope of the earth is called the Atmosphere. It consists of air. Meteorologists divide it into three sections, Troposphere, Stratosphere, and Ionosphere (*qq.v.*).

ATOM : *see* MATTER, STRUCTURE OF.

ATTLEE, CLEMENT RICHARD (1883–), British politician, educated at Haileybury and University College, Oxford, was called to the Bar in 1905. His main interest, however, was social reform, and in 1910 he became secretary of the East London settlement, Toynbee Hall, and in 1913 lecturer in social science at the London School of Economics. He served throughout the World War, reaching the rank of major ; was first Labour Mayor of Stepney, 1919, and remained an Alderman till 1927. He entered Parliament as Labour Member for Limehouse, 1922 ; was parliamentary private secretary to Ramsay MacDonald, 1923 ; Under-Secretary of State for War, 1924 ; member of the Statutory Commission on India, 1927–30 ; Chancellor of the Duchy of Lancaster, 1930–31 ; Postmaster-General, 1931. Elected deputy leader of the Parliamentary Labour Party after the general election of 1931, he succeeded Mr. Lansbury in its leadership in 1935, and has since led the Opposition.

Wide World Photos]

MR. CLEMENT ATTLEE

In Dec. 1937, with Miss Ellen Wilkinson and others, he paid a six days' visit to the Government forces in Spain, where he was hailed as 'the enthusiastic champion of the Spanish Republic in the English Parliament', and a body of English volunteers was named the 'Major Attlee Company ' in his honour ; the visit occasioned a motion of censure in the House of Commons, which was withdrawn after Mr. Attlee had made a personal statement on Dec. 14.

Mr. Attlee has written several works on social and political questions.

AUCKLAND. Largest city in the Dominion of New Zealand (*q.v.*) ; situated on the sheltered Hauraki Gulf, on the east coast of the North Island ; regular port of call for mail and other ships plying between Australia and North America. Pop. (1936), including Maoris, of Auckland City, 102,295 ; of total urban area, 212,159. Tonnage entered (1935) : 2,307,664 tons engaged in overseas trade. Imports handled (1935) : £NZ12,136,235. Exports : £NZ16,084,922 (including 107,529 tons of butter). At the end of 1936 and beginning of 1937, Auckland was the centre of an important strike of workers in freezing-works and cool-stores. The men demanded higher pay as the alternative to a 40-hour week. Go-slow tactics were followed by the first stay-in strike in New Zealand. The strike was settled through the intervention of the minister of labour, who persuaded the employers to increase time-wages pending arbitral review of the main issue. The outstanding event in the city's history in 1937, however, was the successful conclusion of experimental flights by Imperial Airways' and Pan-American Airways' flying-boats, with a view to making Auckland the terminus of regular freight and passenger air routes from San Francisco *via* Hawaii and from London *via* India and Australia.

AUDOUX, MARGUERITE, French authoress ; born of peasant stock at Sancoin, in the Cher, in 1863 ; died at Hyères in Feb. 1937. At the age of 20 she went to Paris and, almost at once, sprang to fame with her autobiographical *Marie Claire*, with which she won the Prix Femina. Her other books were *Cahiers Nivernais* ; *Le Chaland de la Reine* ; *L'Atelier de Marie Claire* ; and *De la Ville au Moulin.*

AUSTRALIA, COMMONWEALTH OF, a self-governing member of the British Commonwealth of Nations, situated in the southern hemisphere between longitudes 113° 9′ E. and 153° 39′ E. and latitudes 10° 41′ S. and 43° 39′ S ; capital, Canberra (Federal Territory) ; ruler, King George VI (*q.v.*), represented by a governor-general, Lord Gowrie (*q.v.*), and by State governors ; national flag, a blue ensign, with the Union flag in the quarter and six white stars in the field.

Area and Population.—Area : 2,974,581sq.m. ; population (March 1937) : males 3,452,503, females 3,367,208, total 6,819,711 ; urban population (June 1933 census) : 69·24 per cent. The number of full-blood aborigines is estimated at about 55,000. The Church of England numbered (1933 census) 2,565,118 adherents ; Roman Catholics, 1,161,455 ; Presbyterians, 713,229 ; Methodists, 684,022 ; other Christians, 603,914 ; non-Christians and no definite religion, 902,092. The overwhelming majority of the population speaks English, and there are only 29,738 English illiterates.

Education is controlled by the States, the school entry age being six or seven years, and the statutory leaving age 14. The average attendance in 1934 was : State schools, 792,892 ; private schools, 196,927.

Leading Cities (population 1935).—Sydney, 1,254,780 ; Melbourne, 1,008,300 ; Adelaide, 315,130 ; Brisbane, 306,154 ; Perth, 210,365 ; Newcastle, 104,485 ; Hobart, 60,900.

History.—Federal Cabinet reconstruction was necessitated by the electoral defeat, in Oct. 1937, of three ministers —Sir Archdale Parkhill (defence), Sir George Pearce (external affairs), Mr. T. C. Brennan (minister without portfolio)—by the simultaneous retirement of Mr. T. Paterson (interior) and Mr. J. A. J. Hunter (without portfolio), and by the resignation, in March 1937, of Sir Henry Gullett (without portfolio, in charge of trade treaties). The new ministry, announced on Nov. 29, was as follows : prime minister, J. A. Lyons ; commerce and health, Dr. (later, Sir) E. C. G. Page (formerly commerce) ; attorney-general and industry, R. G. Menzies ; external affairs and territories, and vice-president of the executive council, W. M. Hughes (formerly health) ; postmaster-general and leader of the senate, Senator A. J. McLachlan (formerly postmaster-general and development) ; trade and customs, Lieut.-Col. T. W. White ; treasurer and development, R. G. Casey (treasurer) ; defence, H. V. C. Thorby (formerly without portfolio) ; repatriation, Senator H. S. Foll (new minister) ; interior, J. McEwen (new minister) ; assistant ministers, J. A. Perkins, V. C. Thompson, A. G. Cameron, and Senator A. N. MacDonald.

Constitutional Changes.—The Australian Commonwealth is a federation of six States sovereign in their own field. Amendments of the constitution must be passed by the Federal parliament, and approved at a referendum by a majority of the votes cast and by a majority of voters in a majority of States. Amendments to extend the powers of the Commonwealth in regard to marketing and to give it full powers to legislate for air navigation and aircraft were passed by parliament and submitted together in a referendum on March 6, 1937. Both were defeated. On the marketing amendment, 1,259,808 electors voted yes and 2,214,388 voted no. The aviation amendment secured a total majority of 1,924,946 to 1,669,062, but not the required majority in four States. Uniformity of laws on civil flying was subsequently secured through the passage of similar legislation in all States.

Elections.—A federal general election was held on Oct. 23, the triennial term of the House of Representatives having expired, and the Senate seats due to fall vacant in July 1938 being filled simultaneously. The United Australia and Country Parties stood as a government coalition, against the Labour Party, Social Credit, and minor groups. Mr. Curtin (Labour), in his policy speech, said Australia should not be committed to warlike activities outside the Commonwealth without the people's consent. She should concentrate on local, particularly air, defence. Her self-reliance would be a notable contribution to the defence of the British Commonwealth. The most effective way of increasing the population was to improve conditions in Australia, providing for unemployed Australians before attempting any new migration. He promised to ' make the Commonwealth Bank the nation's bank '. Labour would enforce the 40-hour week and would provide £6 millions from federal revenues for inaugurating a system of unemployment allowances. Mr. Lyons (U.A.P.) told the electors that, if the birth-rate declined further, without immigration the population would begin to fall in 20 years or sooner. On defence, Australians desired confirmation of the benefits of the imperial connexion rather than isolation. The Ottawa Agreement, the government felt, required revision, and they also sought a satisfactory trade pact with the United States. They would strengthen the Commonwealth Bank as recommended by the Royal Commission (*see* below). They would submit to parliament plans for sickness and widows' and orphans' pensions affecting 3 million people. The States were better able to handle unemployment insurance, but the Commonwealth would help. The government, while not opposed to the 40-hour week, asked for a preliminary inquiry. A parliamentary committee would consider a new method of electing the senate. Dr. Page (C.P.) gave full support to Mr. Lyons's programme.

The campaign was mainly concentrated on issues of external policy and defence. Labour charged the government with contemplating conscription, and extracted from Mr. Lyons the statement that 'conscription is not, and will not be, the policy of my government'. The following key phrases appeared in the eve-of-the-poll pronouncements: Mr. Curtin: 'I give you my pledge that a Labour government will have nothing to do with foreign entanglements. Defence against war and defence against poverty is the substance of our policy'. Mr. Lyons: 'A vote for the supporters of the government is a vote for the security of your jobs and the security of your homes—a vote for Empire co-operation'.

The result was a victory for the government in the lower house and a setback in the senate. The new party strengths in the former were as follows (previous strengths in brackets): United Australia, 28 (32); Country, 17 (14); Labour, 29 (28); Independent 1 (1). The total popular votes were: government parties, 1,659,964; Opposition, 1,392,873. Normally, half the senate of 36 retire every three years, but a resignation added a 19th vacancy. Every State except South Australia returned Labour senators; thus, although all the non-retiring senators were supporters of the government, the latter's majority was reduced to four.

Legislation, etc.—The principal measures introduced in the federal parliamentary session of June 17 to Sept. 15 were obliged to stand over, not having been passed by the date of the dissolution. They included a bill to adopt the sections of the Statute of Westminster which had been left for Australia to adopt at her option, and a bill reconstituting an Inter-State Commission for commerce and finance. The session was largely occupied with debates on the Imperial Conference and on the budget.

The new parliament was opened on Nov. 30. The ministerial programme announced in the governor-general's speech included the resumption of the above measures; legislation for national health and pensions insurance; fresh consultation with the States on a scheme of unemployment insurance; the appointment of a select committee of both Houses to consider a new method of electing the senate; a conference with the States on measures for promoting the well-being of the aborigines; the grant of assistance to British immigrants nominated by Australian friends and relatives, and to child migration schemes; and bills establishing a mortgage bank department of the Commonwealth Bank, and federally regulating fire and life assurance.

The chief feature of the ensuing debate was the Labour Party's demand for a large programme of public works to counteract the economic depression which it warned the government was at hand.

After the general election, discontent was manifested in the Labour Party with the leadership of Mr. John Lang in New South Wales. Two of his chief supporters, Mr. Beasley and Mr. Rosevear, were displaced in the Federal Labour Executive by members of the opposite faction.

Foreign Relations.—Great concern was aroused in Australia by the Sino-Japanese war (*q.v.*). The Australian government had shown its close interest in Far-Eastern affairs by proposing, at the Imperial Conference (*q.v.*) in May, a regional understanding and pact of non-aggression among the countries of the Pacific, 'conceived in the spirit of the principles of the League'. Considerable anti-Japanese feeling was apparent later in the year. Trade unions in South Australia and New South Wales voted for a boycott of Japanese goods, and there were other sporadic anti-Japanese demonstrations. The prime minister, Mr. Lyons, uttered a warning against such individual action, which he said might have serious consequences. Australia would act 'only with the League and the Empire'. The Australian delegate voted at Geneva for the Advisory Committee's report condemning Japan, and Australia was represented, and voted with the majority, at the Nine-Powers' Conference (*q.v.*) at Brussels.

Mr. Curtin, leader of the Federal Labour Party, also declared that a trade boycott would be just as provocative and dangerous as economic sanctions. Referring to President Roosevelt's Chicago speech, he said that Australia should keep clear of international entanglements. 'We have too great a responsibility to our own people to contemplate acting as a buffer in wars in the northern hemisphere.' Mr. Curtin, however, did not advocate withdrawal from the League of Nations.

At Geneva, Australian representatives played a leading part in promoting an approach to world economic betterment through a study of standards of nutrition.

Trade and Industry.—The principal agricultural and pastoral products, with value[1] of output in 1935–36,[2] were wool, £55,186,000; beef, £14,556,000; mutton and lamb, £13,369,000; dairy products, £32,448,000; fruit, £7,702,000; eggs and poultry, £9,578,000; wheat, £29,768,000; sugar-cane, £7,493,000. Total area under crop, 1935–36, 19,974,042 acres.

The output of the principal non-agricultural products was valued as follows in 1936: gold, £10,183,000; silver, £368,000; lead, £764,000; silver lead ore, concentrates, etc., £3,815,000; zinc and concentrates, £935,000; tin and tin ore, £659,000; coal, £6,663,000; ironstone, £2,172,000; forest products (net value, 1935–36), £6,808,000.

Commerce and Employment.—The value of Australia's principal exports in 1936–37 was: wool, £62,529,000; wheat and wheaten flour, £24,362,000; meat, £10,323,000; fruits (fresh, dried, and preserved), £5,053,000; butter and cheese, £8,100,000; gold, £13,724,000; lead, £5,073,000. Total exports, including gold and silver, amounted to £126,200,000 sterling, against total imports of £90,500,000 sterling. After allowing for £22 millions sterling of interest on public debt, and for other invisibles, approximately £20 millions was added to Australia's sterling assets. The export price index reached a peak of 1,019 in April 1937 (1928 = 1,000). By September it had fallen to 919, but was still nearly 15 per cent. above the level of Sept. 1936.

The net value of production in the principal factory industries in 1935–36 was: iron and steel, £7,133,000; general engineering, £6,128,000; railway rolling-stock and tramcar building, £6,774,000; wool manufacture, including hosiery, £8,048,000; total clothing, including boots and shoes, £14,015,000; breweries, £4,363,000; printing, £4,732,000; total, all industries, £162,437,000.

The percentage of trade unionists unemployed fell to 9·3 in the third quarter of 1937, comparative third-quarter percentages being: 1936, 12; 1932, 29·6; 1929, 12·1. Factory unemployment, estimated at 535,000 in June 1937, was then 19 per cent. above the 1928–29 average. The estimated value of material production (gross for primary and net for manufacturing industry) rose from £405 millions in 1935–36 to £432 millions in 1936–37.

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[1] In this article, unless otherwise stated, values are expressed in Australian currency. For rates of exchange, *see* EXCHANGE RATES.

[2] The Australian fiscal and statistical year ends June 30.

Transport and Communications.—*Railways* : Mileage open, 1935–36 : federal, 2,145 miles ; State, 24,944 miles. The federal budget for 1937–38 included the following estimates (actual results for 1936–37 in brackets) : railway receipts, £480,000 (against £436,293) ; ordinary railway expenditure, £1,206,000 (against £1,076,077) ; new railway works from revenue £269,000 (against £194,000).

Shipping.—The total of steam and motor tonnage on Australian registers at Dec. 31, 1936, was 250,512 tons ; other tonnage, 86,051 tons. The volume of shipping entered into Australian ports in 1936 comprised 4,343,118 tons under British flags and 1,894,558 tons of foreign shipping. Inter-state and coastal shipping, other than through voyages, is reserved for Australian ships.

During the 1937 Imperial Conference (*q.v.*), the United Kingdom, Canadian, Australian, and New Zealand governments discussed the problem of competition from subsidized American ships on the North America to Australasia routes. No final agreement was reached, but there was general assent to aiding the Canadian–Australasian line to replace its existing vessels by two new ships. The Australian budget included £10,000 to cover commitments under this head in 1937–38.

Roads.—The combined net loan expenditure of all States on roads and bridges in 1935 was £1,415,000. A contribution of £3,039,530 was made to the States for roads from the federal budget for 1936–37.

Air Transport.—The route mileage of regular internal air services (Aug. 1937) was 17,000 miles, plus 4,361 miles of the Brisbane–Darwin–Singapore link of the England–Australia twice-weekly service. The flying mileage on internal routes totalled 5 millions per annum.

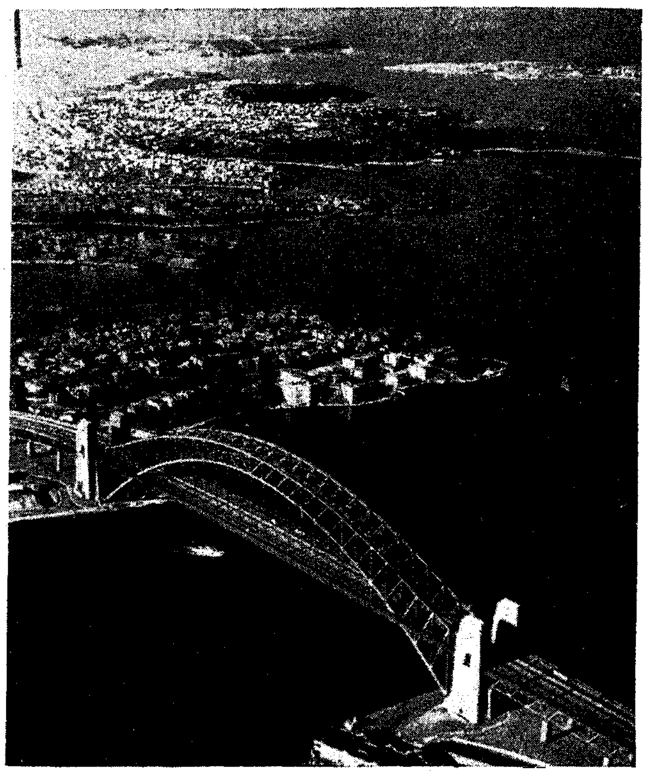
On Jan. 25, 1937, it was announced that agreement in principle had been reached with the British government on the projected London–Sydney flying-boat service, timed to begin in Jan. 1938. Australia would retain administrative and defensive control over the section to Singapore. All first-class mail from Great Britain would be carried for 1½*d.* (sterling) a half-ounce, but Australia would retain a surcharge of 5*d.* a half-ounce. The agreement was for 15 years subject to satisfaction. Introduction of the scheme was retarded by delay in constructing flying-boat bases, but on Dec. 21 the minister of defence promised that temporary bases would be ready in April 1938.

Telegraph, Radio, and Telephone Developments.—Telephone facilities were extended in 1937, especially in the country districts. Six new national broadcasting services were installed in 1936–37, bringing the total to 21. There were also 80 commercial broadcasting services.

Finance and Banking. (*a*) *Currency and Exchange.*—The Australian pound (£A) (with sub-units as in English money) had throughout 1937 a value 20 per cent. below that of sterling, *i.e.* approximately 16*s.* In Sept. 1937 £100 (nominal) of gold cost £A207.

(*b*) *Budget and Taxation.*—Mr. R. G. Casey, Commonwealth treasurer, presented his 1937–38 budget on Aug. 27. The realized surplus for 1936–37 was £1,276,558, revenue being £82,807,977 and ordinary expenditure £81,531,419. Income-tax produced an excess of £1,076,000, thanks mainly to accelerated payment of arrears. Of the surplus, £1 million was appropriated for post office public works, the remainder being set against past deficits.

In view of the formidable and inescapable increases in its obligations, said the treasurer, the government was unable further to reduce taxation. Estimated revenue for 1937–38 was £85,190,000, the main increases being in customs and excise and post office receipts. Invalid and old-age pensions would be raised from 19*s.* to £1 a week, and would cost nearly £2 millions more. The total defence provision in 1937–38, including commitments, was £11,531,000, against £8,067,000 in 1936–37. Only £6 millions (against £5,851,000), however, would be borne on the budget, £3,031,000 being drawn from two trust accounts, and £2,500,000 from a loan to be raised in London. Appropriations for public works, including defence and post office works, totalled £12,023,330 (against £9,184,584), of which £7,721,500 (against £6,858,092) would be provided out of revenue. Payments to the States would show an increase from £15,021,990 to £15,565,500, thanks to more liberal federal aid for roads. The railways would cost £130,000 more. Total budget expenditure would rise by £3,628,000 to £85,160,000, allowing a nominal surplus of £30,000.

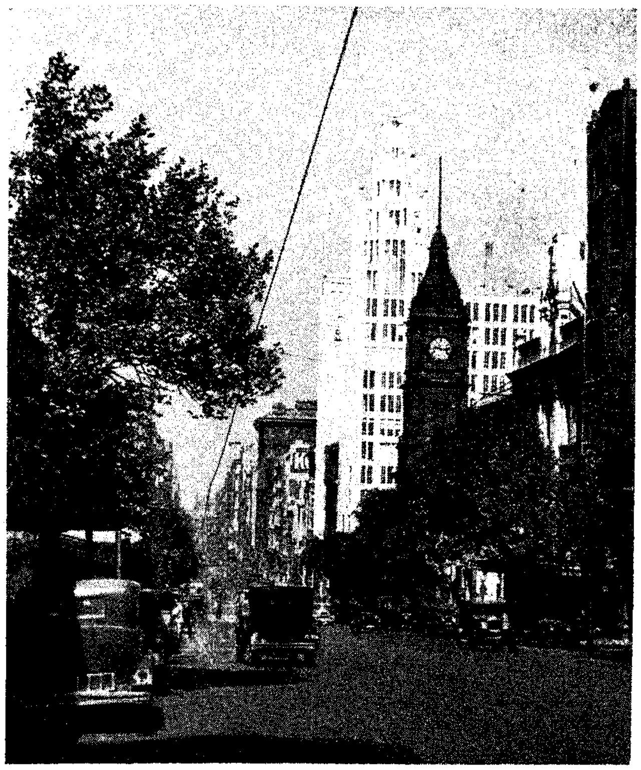


Australian National Travel Association]

SYDNEY BRIDGE AND HARBOUR FROM THE AIR

The States' budgets were in deficit in the aggregate, the combined surplus for Commonwealth and States being only £965,000. The combined public debt rose by £7,090,000 to £1,262,872,000 (nominal values in sterling and Australian currency), while the public debt of the Commonwealth alone fell by £4,130,000 to £356,910,000. In June, a loan of £12,360,000 sterling was converted in London at a saving of £A46,000 in interest, and one of £11,410,000 sterling was converted to a longer-term basis in November.

(*c*) *Banking.*—A Royal Commission on money and banking in Australia, appointed in Nov. 1935, reported in July 1937. It concluded (a Labour member dissenting) that the circumstances of Australia required a system not different in principle from that actually operating. It recommended, *inter alia*, that instead of a minimum ratio of sterling reserves there should be a maximum note issue ; that the Commonwealth Bank be empowered to require the trading banks to keep with it minimum deposits in proportion to



Australian National Travel Association]

COLLINS STREET, MELBOURNE

their liabilities to depositors; that, if possible, an open market for treasury bills be established in Australia; that the trading banks be required to publish accounts revealing all profits, and that if such profits exceeded a fair return for services rendered the government should consider whether they should be regulated or limited; that a mortgage bank or banks be established, and means be sought to supply the credit needs of small concerns in secondary industries; and that a system of decimal coinage should be introduced.

Banking Statistics (Third Quarter of Each Year)

	Advances and Securities	Deposits	Cash Reserves
	£	£	£
1936 . . .	303,300,000	282,400,000	29,500,000
1937 . . .	306,200,000	306,600,000	36,500,000

Defence Forces.—(*a*) *Navy.*—The Royal Australian Navy consists of two 10,000-ton cruisers and one 7,250-ton cruiser (and smaller vessels) in commission, and one 5,100-ton cruiser and one 5,000-ton seaplane-carrier (and smaller vessels) in reserve. Naval vote, 1937–38: £3,600,000, an increase of £600,000, mainly for modernizing two cruisers, improving port defences, and developing Darwin as a naval sub-base.

(*b*) *Army.*—Army personnel, Dec. 31, 1935: permanent forces, 1,810; militia forces, 26,270; reserve of officers, 5,625; others, 483.

There is no compulsory military service. Military vote, 1937–38: £3,300,000, an increase of £1 million, mainly for coastal and anti-aircraft defences.

(*c*) *Air Force.*—Strength (Sept. 1937): 8 squadrons, with 96 planes. Air vote, 1937–38, including civil aviation: £3,600,000, an increase of £2,300,000, mainly for additional squadrons.

(*d*) *Police and Irregular Forces.*—There are no such forces organized on a military basis.

(*e*) *General.*—Munitions supply vote, 1937–38: £1,100,000, an increase of £500,000. Efforts are being made to increase Australia's self-reliance in munitions supply, *e.g.* establishment of factories to manufacture aircraft and Bren machine-guns, encouragement of production of oil from shale.

The basis of Australian defence policy was described at the 1937 Imperial Conference as 'participation in Empire naval defences for the protection of sea-borne trade, as a deterrent to invasion, and as a general measure of defence against raids, combined with local defence to provide a further deterrent to, and a defence against, invasion and raids'. 'Great importance was attached by the Australian delegation to the development of co-operation in defence matters between the several parts of the British Commonwealth'.

Defence issues played a large part in the federal election campaign (*see* above).

Bibliography.—W. M. Hughes, *Australia and War To-day: the Price of Peace*; W. R. Maclaurin, *Economic Planning in Australia*, 1929–36. (H. V. H.)

AUSTRALIAN LITERATURE. The outgrowth of the spontaneous verse and highly-coloured pioneering tales of Colonial days, Australian writing is to-day producing novels of characterization that hold their own in psychological insight with those of Europe and the United States. Nevertheless, Australian viewpoints and the poignancy of the vast antipodean landscape permeate them. They are the product of a distinct national culture.

The output of 1937 was marked by a high level of competence rather than by any enduring achievements. Henry Handel Richardson's great trilogy, *The Fortunes of Richard Mahoney* (completed in 1929), retains its primacy in Australian fiction.

M. Barnard Eldershaw (Miss Barnard and Miss Eldershaw), brought into the front rank by *A House was Built* (1931) and *The Glasshouse* (1936), scored another success with *Plaque with Laurel*, a novel describing a conference of literary people at Canberra. Outstanding was Helen Simpson's *Under Capricorn*, which took her back to the early settler days of 1831. *A Murder in Sydney*, by Leonard Mann, described the mind of an active and passionate girl who had seen her father's satisfaction at her invalid mother's death, had killed his mistress, and finally confessed. Seaforth Mackenzie's *The Young Desire It* was a novel of school and early emotional relationships. Katherine Susannah Prichard published *Intimate Strangers*, a story of infidelities in a pleasure-loving society. Eleanor Dark's success with *Prelude to Christopher* was published several months before the year under review.

To delimit Australian writing is not easy, as a few Australian writers have lately produced little work distinctively Australian in character. Amongst these are Philip Lindsay, with *The Bells of Rye* and *Gentleman Harry Retires*; Jack Lindsay, with *Sue Verney* and his earlier admirable novels of Troy, Rome, and Egypt; and in a lighter kind, Mary Mitchell, with *Decline and Fall of a British Matron*. Martin Boyd's *The Picnic* dealt with the reactions of an English village to an Australian family.

Even novels most characteristically Australian usually found their publishers and in large measure their public in Great Britain. Mention must be made of the more purely domestic products that achieved widest success in Australia itself, namely, Ion L. Idriess's *Cattle King*, the latest of a popular series by this author, including *Lasseter's Last Ride* and *Man Tracks*. *Wonders of the Great Barrier Reef*, written in good strong English by T. C. Roughley, won a deserved success. Outstanding biographies were his daughter's life of the late Prof. Sir Edgeworth David, and George Mackaness's life of Admiral Phillip.

Bibliography.—Leading article on Australian criticism in the *Times Literary Supplement*, Feb. 20, 1937; article on 'Australian Literature To-day', by H. M. Green, in *The Landmark*, Oct. 1937. (W. A. M.)

AUSTRIA (Bundesstaat Österreich), a state of Central Europe and member of the League of Nations. Bounded W. by Switzerland, N. by Germany and Czechoslovakia, E. by Hungary, S. by Yugoslavia and Italy. Capital, Vienna (*q.v.*). President, Dr. W. Miklas. National flag, red, white, and red, in horizontal stripes.

Area, Population, and Cities.—Austria consists of eight provinces (Lower Austria, Upper Austria, Salzburg, Styria, Carinthia, Tyrol, Vorarlberg, Burgenland) and a mediatized city, Vienna. Total area, 32,369sq.m.; population (1934), 6,760,233, of whom 90·57 per cent. were Roman Catholics, 4·38 per cent. Protestants, and 2·83 per cent. Jews. Except for a few Slovenes, Croats, and Magyars, the entire population is German-speaking. Elementary education is compulsory, and is provided by the communes and provinces. Higher education is State, provincial, or private. There are three State universities. The leading cities are Vienna (*q.v.*), with a population in 1934 of 1,874,130; Graz (152,841), Linz (108,970), Innsbruck (61,009), Salzburg (40,232).

The Constitution, introduced on May 1, 1934, is Corporative, on a Christian foundation. Besides the president, there are a Federal Diet (*Bundestag*), State Council (*Staatsrat*), and Cultural, Economic, and Provincial Councils. The Federal Assembly meets when required to perform certain exceptional functions.

History.—The active struggle between Italy and Germany over Austria's body came to an end, for the time, with the Austro-German Agreement of July 12, 1936. The government in 1937 continued its precarious balance amid many opposing forces. Internally, no event of importance occurred. An appeal by the chancellor, Dr. Schuschnigg, to the workers did not notably alter their attitude, half-way between resentment and resignation. There was much monarchist agitation: the chancellor, although sympathetic, declared that the question of the form of State was one which must be decided ultimately by the people; there must be no experiments. Foreign policy remained that of maintaining Austria's sovereignty and independence as a basis of 'friendship with Italy, the truce with Germany, good relations with other States', particularly warm with Hungary. The chancellor visited Italy in the spring, but showed himself slightly more independent than his predecessor towards that country. With Germany, while the German character of the State and people was often emphasized, while also attempts were made to meet the wishes of the more advanced nationalists in Austria, and frequent negotiations conducted with statesmen in Germany, no real normalization of relations could be reached. There were endless incidents, demonstrations by and arrests of Nazi sympathizers, and complaints of breaches of the promised newspaper truce. Commercial exchanges with Germany improved much less than the Agreement of 1936 had anticipated.

Trade and Communications.—Agriculture in Austria continues to expand, the recent decrease in values being due to the fall in world prices. After hay and clover, the largest crops are (in that order) rye, oats, wheat, potatoes, barley. The cultivation of sugar-beet has greatly increased, as has the production of milk and dairy-farming generally. Milk, cream, and butter are now exported in considerable quantities. Timber remains a most important article of export.

The production of lignite in 1936 was 2,897,000 tons; of anthracite, 244,000 tons; of iron-ore, 1,020,000 tons; of pig-iron, 248,000 tons; of steel, 424,000 tons. The production of electricity was 2,600 million kw., mainly hydro-electric. Industry suffered from very severe unemployment. The figure of applicants for work on Jan. 31, 1937, was 407,475; on April 30, 330,095. The number of employed in March 1937 was 922,000, against 1,449,000 in 1929; the index of industrial activity for 1936, 90 (av. 1925–29, 100).

Both imports and exports have, however, risen substantially from the lowest level. The figures, in millions of gold dollars, are:

	1929	1934	1935	1936
Imports . .	459·0	126·9	134·3	139·1
Exports . .	307·9	94·4	99·6	106·1

The monetary unit is the schilling, nominally 14·07 c., but standing in 1936 at an average of 79 per cent. of its nominal value. The budget for 1936 showed a revenue of 1,282 million schillings and expenditure of 1,303 million schillings. The deficit of 21 million schillings was much smaller than that of any year since 1930, except 1932. Budget estimates for 1937 were: revenue, 1,342·1 million schillings; expenditure, 1,399·8 million schillings.

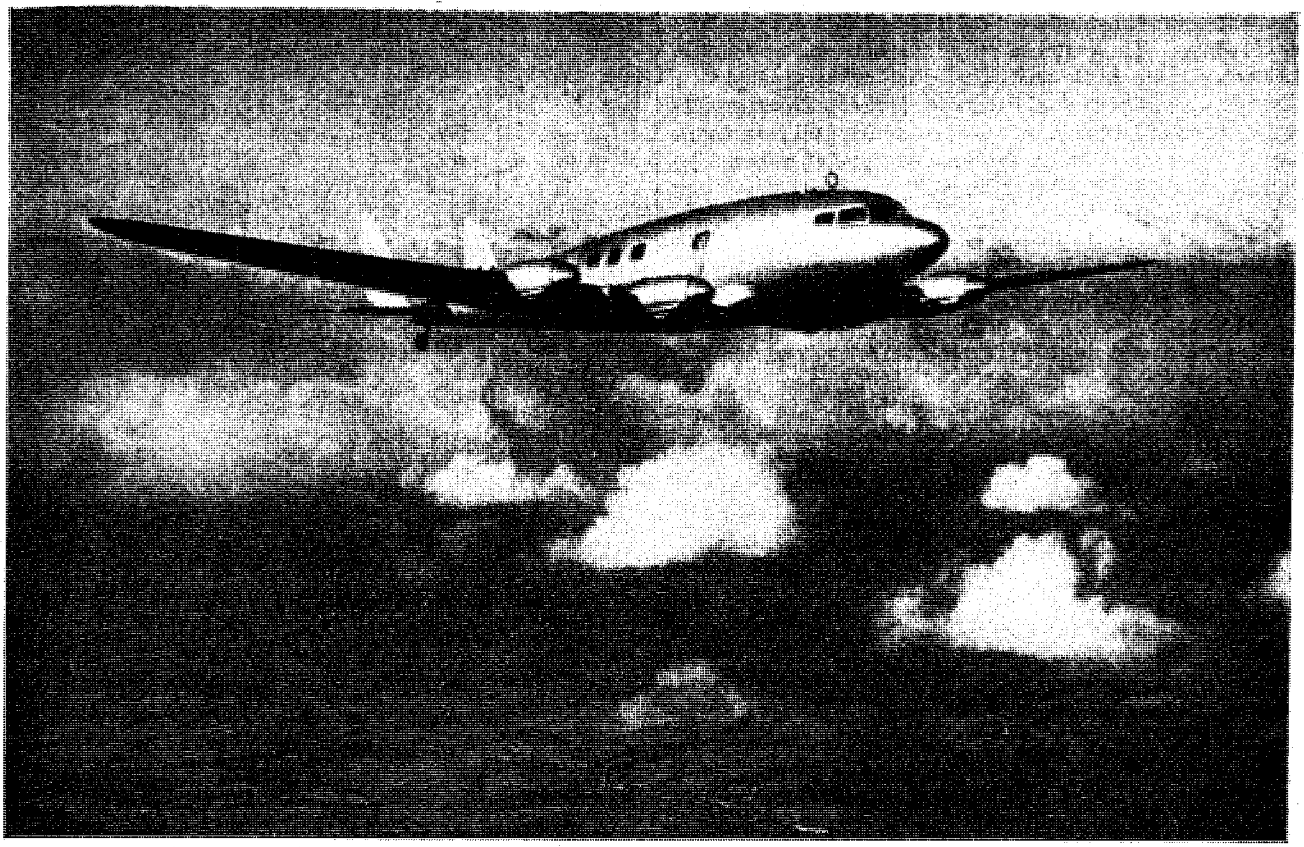
Defence.—Since denouncing the military clause of the Treaty of St. Germain on April 1, 1936, Austria has maintained compulsory military service for all males between the ages of 18 and 42. In 1936 the budgetary effectives were 1,362 officers and 35,160 other ranks. In Jan. 1937 it was decided to form the 'Front Militia' (the patriotic pan-military organization, voluntarily enlisted, standing behind the chancellor) into the reserve of the Army.

Bibliography.—K. Schuschnigg, *Dreimal Österreich* (Vienna, 1937); also *Statistisches Handbuch für den Bundesstaat Österreich* (Vienna, annual). (C. A. M.)

AVIATION, CIVIL. The regular air traffic has developed steadily. About 150 companies operated public air lines during 1937 in the whole world, including the operation of feeder services. Only about 25–30 of these companies have any international importance. Great Britain and Ireland have about 17 operating transport enterprises (2 major ones), the United States about 24 air services (6–7 major ones). The majority of the bigger air transport concerns are national enterprises partly or wholly owned by governments and very often directed by government officials as well.

Commercial Developments.—An important development of commercial aviation has been the introduction of the 'All-by-Air' mailing system for a number of international air lines. By this system all first-class mail is transported by air, usually with a restriction of the weight limit for a single letter, but without any special 'Air Mail' labels, surcharges, etc. This system has already been introduced for the British mail to and from most continental countries, to South Africa, for the mail between Holland and the West Indies, for some German lines and other scheduled routes.

The Empire Air Mail Scheme provides for a flat rate of 1½*d*. per half ounce for mails and 1*d*. for post cards to South Africa, India, Malaya, and Australia. The agreement



Flight]

DE HAVILLAND INTERCONTINENTAL AIR-LINER, 'ALBATROSS', WHICH WILL CARRY 20 PASSENGERS AT OVER 200 M.P.H.

between the British Government and Imperial Airways, Limited, for the next 15 years arranges for 9 services per week to Egypt, 5 to India, 3 to East Africa and to the Straits Settlements, and 2 weekly services to South Africa and Australia. Extended night mail services will be organized progressively. Eventually Sydney will be brought within seven days of London, Capetown and Singapore within about four days. The subsidy paid for this scheme is based on a decreasing scale, starting with £750,000 annually and decreasing to £450,000.

The Pacific Ocean has been conquered and many air liners have crossed the Atlantic. A big step towards the creation of a regular transatlantic air route connecting England with the United States was taken during 1937 by means of a number of successful experimental crossings on the northern Atlantic route to Newfoundland. These experimental flights were carried out by Imperial Airways and Pan-American Airways using normal transport flying boats.

The main difficulty of the important route between Europe and North America is the meteorological conditions encountered over the Atlantic. Knowledge of Atlantic weather seems still too restricted for a regular operation of a traffic schedule over such a long crossing. The experience gained jointly by Imperial Airways and Pan-American Airways during the summer of 1937 between Ireland and Newfoundland and between Bermuda and New York is therefore of special value. These experiments are being continued. The planes used have been four-engined flying boats. Bigger flying boats are in preparation in England and in the United States for the continuation of this service. Trials with four-engined landplanes are also intended by Imperial Airways.

On the southern Atlantic route to North America *via* the Azores and Bermuda, the Deutsche Luft Hansa has been

STATISTICS OF REGULAR AIR SERVICES, 1936
(completed from H.M. Air Ministry Report on the Progress of Civil Aviation, London, 1937)

Country	Route Mileage	Miles Flown	Passengers Carried	Mail (including Parcels) Tons	Goods (including Newspaper and Excess Baggage) Tons
BRITISH EMPIRE:					
United Kingdom . . .	27,230	9,584,000	236,300	977	2,147
Canada	13,446	7,100,401	97,888	494	10,244
Australia (excluding New Guinea)	17,675	4,307,694	31,879	63·9	239
New Zealand . . .	1,030	706,143	21,251	38	17
Union of South Africa . .	3,126	629,644	15,312	41·5	262
India	2,970	608,274	3,346	49·5	0·46
UNITED STATES OF AMERICA . .	61,532	73,303,836	1,147,969	8,180	3,728
FRANCE	34,211	7,005,700	58,236	343	1,008,909
GERMANY	23,494	11,111,060	286,311	2,556	4,772
HOLLAND	14,308	3,884,295	67,142	390	1,040
ITALY	14,640	4,355,037	52,991	450	375
SWITZERLAND	2,289	849,225	25,404	162	203

operating experimentally with the help of catapult-carrying depot ships. These special ships are stationed at suitable points along the route and handle mail-carrying seaplanes. At present four of these ships are in service. The catapults are capable of launching aircraft of 17 tons all up weight. German passenger air services across the Atlantic will be continued with airships as long as no large aircraft are ready which can make the journey comfortable from the passengers' point of view and on a paying basis. For mail-carrying purposes both floatplanes and flying boats are being used.

The Atlantic route to South America is over a much shorter sea route, and is therefore a scheduled route. The French company Air France, and the German company Deutsche Luft Hansa compete with one another. A recent experimental flight with a four-engined landplane, capable of flying at 200m.p.h., from Paris over Dakar, Natal, Buenos Aires to Santiago (7,862m. in 59hrs. with only 52hrs. flying time) seems to indicate that landplanes may be used for the Atlantic crossing as well as seaplanes or flying boats. The French service to South America is weekly.

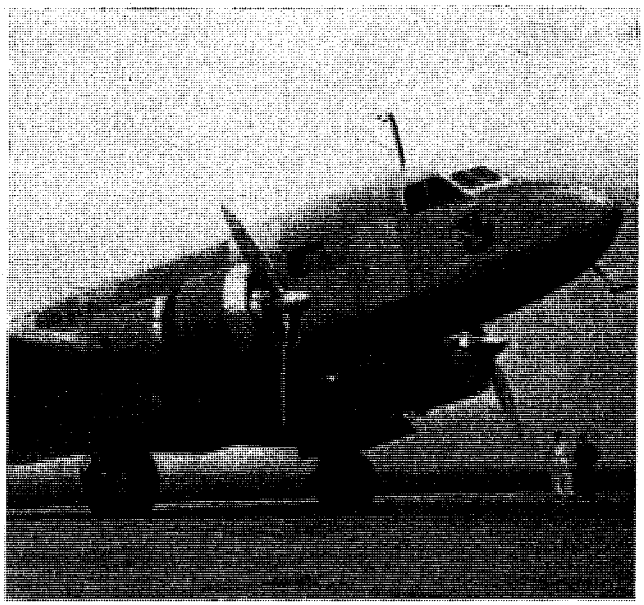
Of special interest have been Russian experiments on a trans-polar route from Europe to North America. Trial flights undertaken during 1937 were based on the results of a careful meteorological observation in the Arctic. The Russian floating meteorological observation station established on the ice near the North Pole has secured valuable information for a future air line across these regions.

The size of modern air-line operating companies is already considerable. In the United States one of the biggest concerns, Pan-American Airways (P.A.A.), operates nearly 50,000 route miles with 224 airports, 138 ground radio-control and 124 meteorological stations, employing about 4,500 people and 150 modern air liners. P.A.A. established the service from California to China across the Pacific Ocean, and the services between the United States and South America. The next extensions will be the air line across the northern Atlantic, and a service between the United States and Alaska. Large transatlantic flying boats for 100 passengers and a crew of 16 for 5,000m. range are under construction. Trips round the world by air for a fare of £450 ($2,255) are scheduled, taking 28 days, including several days to be spent in cities along the route.

Because of the British rearmament orders, however, there is a definite shortage in modern aircraft for transport in England and in the British Empire. Regular air-operating services in the Empire register a total of 444 aeroplanes, of which 292 are British, the remainder being chiefly American and German.

When considering the importance of international scheduled air routes, the political aspect cannot be overlooked. The British Empire is politically bound to provide Empire air routes from England to the Far East, to Australia, New Zealand, and to South Africa. The Monroe doctrine is best served in the American sphere by air lines, and German and French aspirations in South American countries are helped by air services crossing the South Atlantic. The political importance of an air line leading directly from England to the United States might be of greater value than the economical one.

Private transport aeroplanes are coming more and more into use. Mining and other companies in all parts of the world operate freight-carrying aeroplanes, survey planes for land exploitation, oil pipe-line control, high-tension wire grids, and business executives are provided with their own passenger planes by their firms. Transport planes for the safe and quick distribution of valuable or perishable freight (Press photographs, film pictures, gold and jewels, newspapers, flowers, fruits and vegetables, pharmaceutic drugs, etc.) are rapidly increasing in numbers. One special charter flight across the Atlantic for £40,000 has been accomplished for the transport of coronation films and Press photographs between the United States and England.



Air France]

THE BLOCH 220 TWIN-ENGINED MONOPLANE WITH ACCOMMODATION FOR 16 PASSENGERS AND 3 CREW USED BY AIR FRANCE

Private passenger aeroplanes for air touring are not yet as common as private transport aircraft. This is due to the expense and the scarcity of aerodromes and licensed landing-grounds, but more largely to the fact that the piloting of an aeroplane still needs considerable skill and training. The progress of light and ultra-light aeroplanes has not been as rapid as might have been with the restricted market. The ultra-light aeroplane (about up to 40h.p. for a single-seater and up to 70h.p. for a two-seater) is well represented in the United States and seems to have given satisfactory results under a subsidy scheme in France, where during the first nine months of 1937 not less than 34,714hrs. have been flown and thousands of pilot certificates have been obtained.

The ultra-light aeroplane has been responsible for a very remarkable and encouraging fact in Great Britain. Nearly every country in the world has a strict system of technical supervision and inspection of aircraft as regards design, material, and construction, resulting in certificates of airworthiness. The British Air Ministry some years ago exempted ultra-light aircraft from official supervision, granting a 'permit to fly' without a certificate of airworthiness, provided the owner of the aircraft had a third-party insurance (which is being granted with practically no supervision whatsoever).

Sporting Aviation.—Civil aviation as a sport comprises, besides normal and acrobatic flying, air racing, gliding, soaring, and parachuting. Air races (*q.v.*) introduce low-powered racing aeroplanes. Amateur-built tiny aeroplanes of this kind have become fairly common in the United States for competitions and are by no means altogether freaks. Competitions in England and in France have helped to encourage fast touring and racing aeroplanes flown by private owners and generally equipped with very reliable types of air-cooled engines practically excluding emergency landings due to engine breakdown. Gliding (*q.v.*) has developed into a popular sport not unlike yachting and has made sound progress during the year. Long cross-country flights accomplished by means of thermal soaring are giving a constant impulse to this movement. Parachuting—apart from the performance of professional jumpers whose contribution to the development of this life-saving device is so often overlooked—seems to be considered as a kind of popular amusement for everybody in Russia and France if performed with stiff parachutes on ropes from special jumping towers.

Technical Development.—Generally speaking the technical progress in civil aviation has remained restricted to improvements in transport efficiency. Cruising speeds of 200m.p.h. are by no means exceptional to-day. Only five years ago top speeds of 125m.p.h. were considered good. Aero-dynamical improvements and progress in power plane development largely contributed to this rise in speed.

In spite of increased engine powers and pay loads, the modern air liner has not grown much in size, the wing becoming more heavily loaded than with earlier models. This trend to high wing loadings has caused the stalling speeds to rise, and the general aerodynamical refinement resulting in decreased air resistance has caused the gliding angles to become flatter. Despite the new general use of air brakes, flaps and slots, variable pitch propellers, supercharged engines, etc., the modern air liner has become more and more difficult to handle. The assisted take-off for heavily loaded high-speed commercial aeroplanes has been studied in England in connexion with transoceanic services. An experiment now undertaken by Imperial Airways in collaboration with Short Brothers is the Mayo 'composite aircraft', consisting of two planes coupled together for the take-off. The lower component of the arrangement under test at the beginning of 1938 is a lightly loaded big flying-boat, a modified and enlarged version of the four-engined Short Empire Class flying boats now much used by Imperial Airways. This lower component carries during take-off and initial climb the fully loaded transport seaplane which has to be started. This upper component to be released from the lower component is a four-engined float seaplane, the floats of which are resting in cradles mounted on the wing of the flying boat. The pilots of both aircraft are in telephonic connexion with each other while the upper seaplane is attached to the lower one. As the catch connecting the two aircraft during flight is released at a certain height, the upper seaplane is lifted away from the flying boat. (*See* AERONAUTICS.)

The refuelling of commercial aeroplanes during flight by means of a tanker aeroplane offers possibilities of a take-off with a small fuel load only and would permit economical non-stop distance flights with pay loads. 'Truck-launching' is another proposal for the assisted take-off. That means catapulting aeroplanes from a permanent way by means of a carriage provided with a turntable, on top of which the aircraft is resting.

The main problem of approach and landing has not yet been brought to any new solution, the speed ranges obtainable being not greatly improved against those of eight to ten years ago. Air brakes giving an increase of drag to steepen the glide, slots and flaps which not only steepen the glide but decrease the stalling speed by producing additional lift, are in common use with modern air liners. Wheel brakes are shortening the run after the touching down, and permit an effective control on the ground. The next step already incorporated in some air liners under construction is the three-wheel undercarriage with a steerable front wheel under the nose of the fuselage and the rear wheels arranged behind the centre of gravity of the aeroplane. Its advantages are the superseding of the 'three-point landing' often followed by bouncing, and stability on the ground during cross wind starts and landings. Retractable undercarriages as a means for reducing the drag are commonly used to-day.

Improvements in modern air liners concern the introduction of the automatic control or 'gyropilot', an ingenious apparatus incorporating gyroscopes which steer an aeroplane automatically on a steady course at a given height and direction. This kind of control has proved especially valuable for blind flying and for long-distance flights. Progress in navigation means for blind approach and blind landing cannot, however, stand comparison with the aero-mechanical improvement realized during the last years. In poor visibility landing is practically still largely unsolved. The Lorenz ultra short wave approach system, which defines the gliding path to be followed into the aerodrome, is in an advanced stage and holds out great possibilities. Modern wireless direction-finding apparatus still suffers from night effect and static trouble. Commercial aircraft crossing the sea over longer distances therefore prefer to rely on celestial navigation. A Telefunken device for combating the night error is under service trials. Screened and static-proof aerials are being introduced protecting against icing-up and static disturbances.

Electric discharges during flight are now more often experienced, due to increased blind flying practice. Usually the effects are not serious, and remain restricted to shocks and damage done to wireless sets, but there is still the suspicion that certain very serious accidents, which are otherwise inexplicable, might have been caused by this reason. Ice accretion still remains a serious trouble. Ice prevention devices (de-icers) on wings, tailplanes, and airscrews are common with American and French aeroplanes. Imperial Airways and K.L.M., the Royal Dutch Air Line operators, are experimenting with ice-deterrent substances (*see* AERONAUTICS). Ice warnings are now issued by meteorological stations, and have been of great help to civil aviation. The operation of air liners at great heights near the stratosphere seems to become a practical proposition. This over-weather flying needs a special equipment which is now being developed by the American industry. The aeroplane must have air-tight cabins for passengers and crew, supercharged to a pressure of about 6lb. per sq.in. for flying at a height of 20,000ft., getting fresh air and oxygen supply; care has to be taken to deal with temperature effects in the structure. The power plant has to be equipped with two- or three-stage compressors giving normal pressure in the intake manifolds. The advantages of flying at great heights are the very high speed obtainable, the fairly regular winds, the absence of gusts and ice accretion, and finally the possibility of celestial navigation under all weather conditions.

Serious problems are presented by the airscrew for big commercial aircraft. The variable pitch and especially the constant-speed airscrew have become a necessity for reasonable take-offs and good efficiencies at cruising speeds. The two-position controllable pitch airscrew is now being superseded by the constant-speed variety which eliminates adjustments by the pilot and which gives a gain in cruising speed efficiency. The mechanical difficulties inherent to

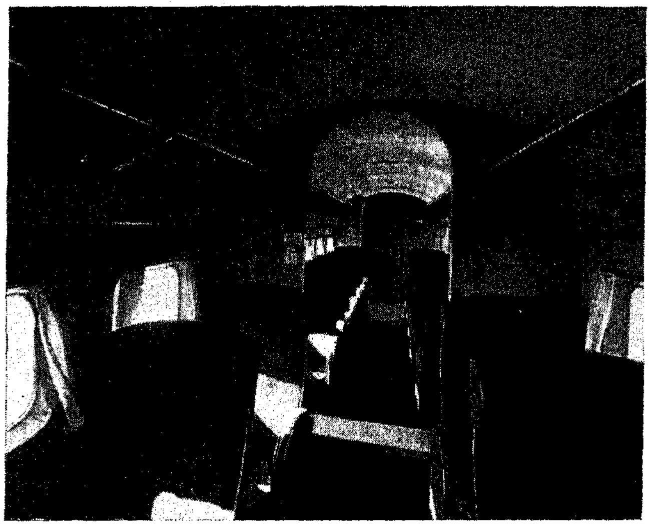


Photo: G. Brisgontier.]
THE BLOCH 220 TWIN-ENGINED MONOPLANE. INTERIOR VIEW.

variable pitch systems may be considered as overcome. But the trend to bigger engine units (from 1,400 h.p. to about 3,000h.p.) in connexion with gearing down, leads to airscrews having a big diameter and fairly high tip speeds. This will mean an increase of airscrew-weight up to a considerable percentage of the whole plant weight and lowered efficiencies due to high tip speeds. The protection against ice-accretion is still another insufficiently solved problem. Wooden blades, now considered obsolete except for small aircraft, may again be favoured because of their lower weight.

Important development work has proved its value for the comfort of passengers. Sound-proofing of cabins is common to-day, and controllable ventilation and heating. Adjustable seats facilitate travelling over long distances. Sleeper berths for night flying are not exceptional. Oxygen supply is provided for passengers and crew of planes crossing high mountains.

Metallic materials (steels and light alloys) are used for the main structure of most air liners, while for small aeroplanes a mixed wooden-metallic construction is still preferred. One remarkable exemption is the four-engined de Havilland Albatross monoplane built for long-distance experiments of Imperial Airways. This modern air liner shows a refined wooden construction. Plastic materials (thermo-setting synthetic resins) may become important for structural parts.

The progress in power plant construction does not appear so obvious as the aerodynamical refinement. But there has been a steady improvement in aero engine design. The reliability and life of a modern aero engine have become astonishingly high. One engine extensively used for feeder line aeroplanes, the de Havilland Gipsy Major, is now officially permitted to run for 1,000hrs. between overhauls. Only a few years ago the interval was 75 to 200 hours, even for engine types which were reputed as reliable. The power developed has been pushed up by increased compression ratios (due to fuels proving a higher octane number), increased engine speeds, raised intake pressures (supercharger boost), and improved cooling of cylinder heads. Every engine installation is now provided with air ducts for the effective transmission of heat on radiators and fins. The research in anti-knocking fuels has played a big part in the general development. Fuels with an octane value of 100 (the octane value is a comparative figure stating the anti-knocking qualities) are under service tests, and those with 110 octane value and more are in preparation. A few years ago the average octane value was about 70.

Nearly all commercial and civil aircraft in Great Britain, the United States, Holland, and Switzerland are equipped with air-cooled engines, only Germany and France using liquid-cooled engines. The compression ignition engine (Diesel system) is only to be found on German air liners. The fuel consumption of the compression ignition engine is reputed to be low, and several German long-distance flights with Junkers Diesel engines seem to have proved it. But it may be pointed out that with fuels of a very high octane value permitting high compression ratios without detonation, similar thermal efficiencies are obtainable with the petrol engine.

The output of a cylinder is restricted by the heat conduct, and in this respect the cooling of exhaust valves is limiting further progress. Sleeve valves help to overcome this difficulty, and air-cooled Bristol radial engines incorporating this principle have done extremely well. The future may show the sleeve valve air-cooled radial in competition with the liquid-cooled compression ignition engine for air liners. For small civil aeroplanes, air-cooled engines of the 4- and 6-cylinder in line type are dominating.

One of the most serious problems which still has to be solved is that of fire prevention. Crashes with modern high-speed aeroplanes are often followed by fire, the cause of which is not known in most cases. The only fact which is quite obvious is that fuel vaporized by the impact of the crash is ignited while mixed with air, explodes, and starts the fire. The most effective prevention seems to be the use of fuels which are less likely to form explosive mixtures while vaporized. Most heavy fuels used for compression ignition engines should satisfy this requirement. But the Diesel engine still seems to be far from equal to the modern petrol engine, even if the omission of electrical ignition is regarded as an additional safety factor.

Airships.—The commercial use of airships has remained restricted to Germany, in spite of the excellent results. The *Hindenburg* airship was laid up during winter months, and underwent modifications resulting in 20 additional passenger cabins, bringing up the total to 70 passengers. The use of Blaugas as part of the fuel was discontinued. The airship which had made so many successful trips across the Atlantic met with a terrible disaster on May 6, 1937, at Lakehurst, while landing shortly after a thunderstorm. In spite of this disaster Germany decided to continue the airship service. But the use of hydrogen, which has been responsible for most airship accidents, is now banned, and the new L.Z.131 under construction is being modified for filling with helium. Helium gas means a certain loss in lifting capacity, but it is not inflammable.

Special Aircraft.—Gyroplanes, *i.e.* aircraft producing lift by revolving wings, have made good progress, but can still only be considered as in the experimental stage for scheduled air transport. The Cierva 'jump start' autogiro has been successfully demonstrated. The Hafner gyroplane has shown an exceptionally good manoeuvrability. The German Focke helicopter has made cross-country flights of 50m. length, and is at the present holding all world's records for helicopters. (A. R. W.)

AZANA, MANUEL (1880–), Spanish statesman and jurist, born at Alcalá de Henares ; studied at Madrid and Paris, became a barrister and, while a lecturer at Madrid University, contributed widely to the home and foreign press. He specialized in military subjects, was vehemently opposed to Primo de Rivera's dictatorship, was a strong anti-clericalist, and in 1930 joined the revolutionary committee which paved the way for the republic. Arrested and imprisoned, he was released (April 1931) on the proclamation of the new régime, and, as minister of war in the first republican ministry, quickly reduced armament expenditure. On Zamora's resignation (Oct. 14, 1931) he became provisional president, and in the following December president. His reforming zeal in social, military, religious, and educational spheres occasioned the opposition of both Conservatives and Radicals, and his ministry was marked by uprisings of Catalans, monarchists, and anarchists ; in June 1933 he reorganized his cabinet, but resigned in September, being succeeded by Lerroux.

In 1934 the Catalan rebels nominated him head of their proposed provisional government, but he was arrested and imprisoned for 10 weeks (October–December) ; in March 1935 he was again arrested on the accusation of having rendered assistance while in office to Portuguese revolutionaries, but the charge was allowed to drop, and on May 10, 1936, he succeeded Zamora as president of the republic. During the civil war he was forced to move from place to place with the government, and used his best endeavours to restrain extremist groups.

M. Azana is the author of a number of politico-philosophical works, as also of novels, dramas, and translations.

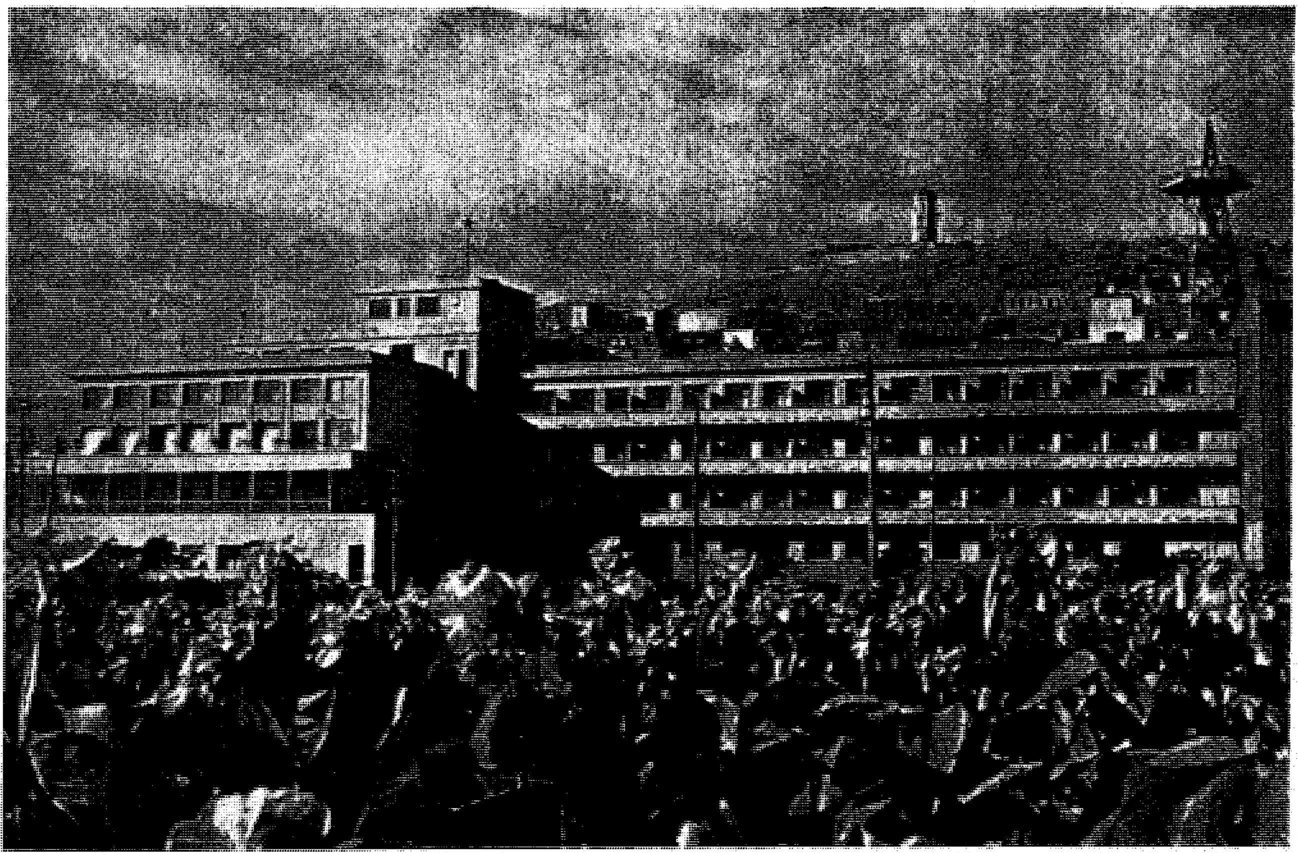
AZERBAIJAN S.S.R. A Soviet republic, a member of the U.S.S.R. (*q.v.*), in Eastern Transcaucasia on the Caspian Sea, bordering north on Georgia and Daghestan, west on Armenia, and south on Iran. The capital is Baku, the oil metropolis ; the national flag has a red ground, with a gold sickle and hammer and initials AZ SSR in the top left corner. The leading cities, with 1936 population figures, are: Baku 702,000, Kirovabad (formerly Gandzha) 90,700, Nukha 30,900.

Area and Population.—Area: 86,000sq.km. Population (1933) : 2,891,000 (rural 1,921,000, urban 970,000), comprising about 20 nationalities altogether, with 63·3 per cent. Turks, 12·4 per cent. Armenians, and 9·7 per cent. Russians. The chief languages are Azerbaijan, Armenian, and Russian. The total number of pupils attending schools (1936–37) was 549,000 ; there are 13 higher educational institutions with 11,000 students, and 87 research institutes.

History.—The Ninth Extraordinary Azerbaijan Soviet Congress, sitting in Baku, adopted on March 14, the new constitution of Azerbaijan, which thenceforth belongs directly to the U.S.S.R. as an equal, independent Union Republic. The Azerbaijan S.S.R. includes the Nakhichevan Autonomous S.S.R., the Nagorno-Karabakh Autonomous Province, 50 districts, and the capital Baku. 95·6 per cent. of the population took part in the elections to the Supreme Council of the U.S.S.R. on Dec. 12.

Trade and Communications.—Sown area (1936) : 4,311sq.m. In 1937, 86·5 per cent. of peasant households were collectivized. The chief products are cotton, rice, fruit (especially grapes), and, in the south, tea, citrus, and silk. Stock breeding (especially horses) is an important activity. It is the chief oil territory of the U.S.S.R., and also has iron strata. The retail trade turnover (1936) was 1·9 milliard roubles ; and the output of industry (1936—at prices 1926–27) was 2,054 million roubles. There were, in 1936, 847km. of railways. (S. YAK.)

AZORES. A group of nine islands in the Atlantic, belonging to Portugal, lying in 38° 44′ N. and 29° W. The islands are Flores, Corvo, Terceira, San Miguel, Santa Maria, San Jorge, Pico, Fayal, and Graciosa. Ancra, in Terceira, is the capital. The combined area is 922sq.m., and the population (1930 census) 253,935. The islands have recently acquired new importance as a fuelling base for trans-Atlantic air services.



Planet News] BAKU, AZERBAIJAN S.S.R. THE NEW INTOURIST HOTEL

B

BACON: *see* Pigs and Bacon.

BACON MARKETING BOARDS: *see* Marketing Boards in Great Britain.

BACTERIOLOGY. Bacteria are extremely important in everyday life, since they may be dangerous, troublesome in causing spoilage, or useful for industrial purposes and food production. Their rôle in disease necessitates costly precautions, including water purification, wool sterilization, the control of rats, the provision of main drainage, and the maintenance of a trained medical service, in order to minimize epidemics. To feed modern large communities, perishable commodities must be preserved. This is done by refrigeration, drying, and canning, whilst pasteurization has done much to improve the keeping quality of milk and prevent disease.

Useful bacteria produce vinegar and cheese, give flavour to butter, and convert plant materials into silage for cattle feeding. Soil bacteria decompose organic manures, releasing plant nutrients, and some species fix nitrogen. Leguminous crops require certain bacteria in order to grow well, and sometimes the seed is inoculated before sowing. Plant and animal diseases, however, cause considerable losses, and deleterious bacteria impoverish the soil. Industrially, organic acids, solvents, and fuel gases are produced by bacterial action, whilst sewage purification is effected by means of the bacteria it contains.

Amongst the new species described in 1937, the sulphur bacteria are represented by *Thiospirillum pistiense*, a thermophilic autotrophic sulphur oxidizing organism found in hot springs. Bacteria of this type grow at abnormally high temperatures and do not use organic substances for food. *Bacillus thiocyanoxidans*, which could oxidize thiocyanates to sulphates, was isolated from gas-works liquors. *Proteus melanovogenes*, a soil and manure organism, was found to be responsible for a black rot of imported eggs.

Several new plant pathogens have been described. Amongst these the following caused leaf-spot diseases: *Bacterium flavozonatum* (Begonia), *Phytomonas lactucæ-scariolæ* (wild lettuce), *Phytomonas primulæ* (Primula), *Phytomonas geranii* (Geranium), and *Bacterium tardicrescens* (Iris). *Phytomonas fabæ* was found to be the cause of a black stem rot of *Vicia faba*, and *Bacterium pseudotsugæ* produced galls on Douglas Fir. New animal pathogens included Gram-negative cells, less than half a micron in diameter and considered to be intermediate between the viruses and the bacteria, causing mouse catarrh and fowl coryza. *Serratia anolium* caused tumours in lizards. Four new species of *Salmonella* (typhoid and paratyphoid bacteria) were recorded. New species of these bacteria are named after the locality in which they were first detected, and the formulæ which follow the names describe the antigens present in the bacteria. Antigens are substances which stimulate an animal to produce other substances (antibodies) which will react with the antigen in some observable way. In these formulæ the Roman numerals refer to the 'somatic' antigens (those in the bacterial cells), whilst the arabic numerals and small letters denote the antigens in the flagella (the 'flagellar' antigens). In phase variation an organism appears at one time to have one set of antigens, and to have another set at another time.[1] The new species of *Salmonella* were *S. bredeney* (I, IV, lv, 1, 7), *S. montevideo* (VI, VII, gomst, —), *S. new brunswick* (III, XV, lv, 1, 7 +), possessing a new somatic antigen (XV), and *S. amersfoot* (VI, VII, α, enx, β, d, —). The α and β phases of the flagellar antigens of the latter undergo continuous variation, the α phase giving rise to the β, and vice versa.

Variation in somatic antigens, hitherto undescribed, has been detected among the dysentery bacilli. These all contain three antigens, labelled V, W, and Z, one or other predominating in the corresponding V, W, and Z races. These races gave variants in which the subsidiary antigens were more or less completely lost. There was a constant tendency to revert to the original form. A heat-sensitive, reversibly oxidizable surface antigen has been found in virulent streptococci of Lancefield's group A. This yielded the haptens M and C on hydrolysis. A hapten is a partial antigen, *i.e.* one which will react with an antibody but will not stimulate its production by an animal. Also, from β-hæmolytic streptococci, a chemically pure, stable hæmolysin (a substance causing the solution of red blood corpuscles) has been extracted with moist ethyl ether. From the Shiga type of dysentery bacilli a specific antigen has been extracted with cold diethylene glycol. This substance produced an immunological response qualitatively similar to that produced by the intact organisms.

Concerning the growth of bacteria, the gamma rays from radium were shown to inhibit cell division but not increase in cell volume in *Bacterium coli*, so that long filaments resulted. Pimelic acid, nicotinic acid, and β-alanine were all necessary growth factors for the diphtheria bacillus. Uracil was essential for the growth of *Staphylococcus aureus* in the absence of oxygen, whilst nicotinic acid and vitamin B1 were required for the aerobic growth of the same organism. The V factor necessary for the growth of *Hæmophilus parainfluenza* could be replaced by purified codehydrogenases. These are activators of the dehydrogenase type of enzyme, namely, enzymes catalysing the removal of hydrogen from organic substances. Lactic and propionic acid bacteria also required growth factors. Nutrient broth has been shown to contain substances which inhibit toxin production by Staphylococci and sporulation by *Bacillus subtilis*. These substances could be removed by adsorption on Cellophane and charcoal respectively. From the Crown Gall organism, *Bacterium tumefaciens*, a complex endotoxin capable of producing tumours in sunflowers has been extracted. This organism also produces β-indolacetic acid, which itself can cause tumour formation in a number of plants.

The bacteriorhizas (mixed bacteria closely associated with roots) of various seedlings have been shown to stimulate the germination of seeds, and by the use of strains of bacteria capable of dissolving fungi the incidence of fungal disease in seedlings has been reduced. The root secretions of maize and wheat have been found to inhibit the growth of the nitrogen-fixing organism *Azotobacter*. Also, the secretions from pea roots exerted a deleterious influence on beneficial soil bacteria. Finally, a protein possessing the properties of Bacteriophage, the mysterious and apparently living agent which causes the destruction of bacteria, has been isolated. This protein had a molecular weight of 500,000, and was active in the incredibly small dose of one million millionth of a milligram.

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[1] A full description of antigens, and explanations of the other technical terms used in this article, may be found in *The Principles of Bacteriology and Immunity* by Topley and Wilson, 2nd edition, 1937.

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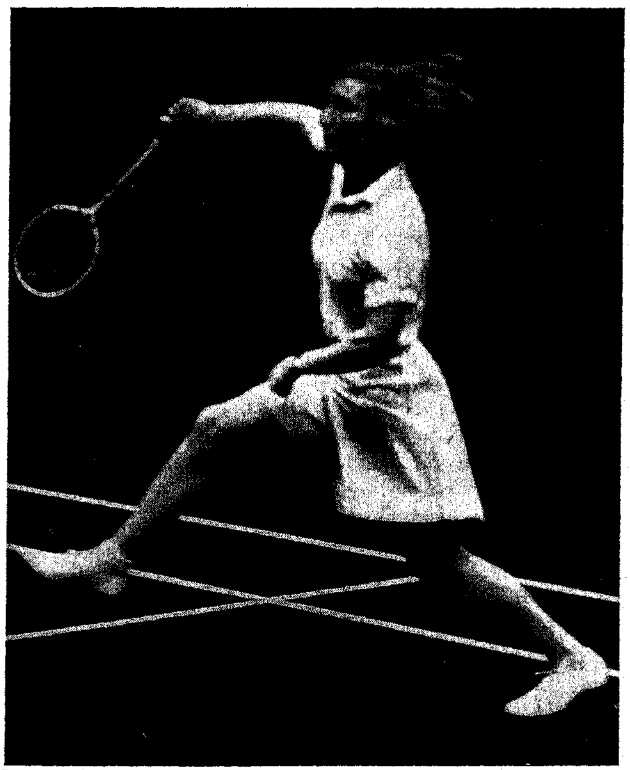
BADMINTON. Badminton suffered a great loss during the year 1937 in the death, on Nov. 28, of Mr. F. W. Hickson, a tireless hon. secretary of the Badminton Association for 10 years. The position is now filled by Mr. D. L. H. Mercer, the well-known Hornsey cricketer.

The steady growth of the game was maintained during the past year, the latest figures showing that in England alone there are 1,229 affiliated clubs.

The playing side of the game suffered a loss, too, when Miss Thelma Kingsbury, the ladies' singles champion and joint holder, with I. Maconachie of Ireland, of the mixed doubles title, became a professional, and followed so many of England's best professional players to the U.S.A. and Canada.

The reigning open champion is R. C. F. Nichols, who, in partnership with his brother L. Nichols, also won the men's doubles title. The ladies' doubles title went to Mrs. Uber and Miss D. Doveton. Cambridge won the University match for the eighth successive year, while the county championship also followed the usual course and was won by Middlesex. It is hoped to organize, in the near future, a second-team inter-county championship.

Recent rule changes have been mostly of a superficial nature. Throughout the rules the word 'point' is now substituted for the word 'ace'. For the purposes of ladies' singles matches, when the score is 9–all, the game may be 'set to 3' (formerly the number was '5'), and at 10-all the game may be 'set to 2' (instead of '3'). This change was made with a view to increasing the popularity of ladies' singles contests.



Sport and General]

MRS. UBER, HOLDER WITH MISS D. DOVETON OF THE LADIES' DOUBLES TITLE.

BAHAMAS, a British colony and island group east and south-east of Florida; capital, New Providence (pop. 19,756); area, 4,404sq.m. Population (official estimate, 1936), 66,219. The government is administered by an appointed governor and legislative council and an elected assembly. The chief events of note in 1937 were the appointment, in May, of C. C. F. Dundas as governor, succeeding Sir Bede Clifford, and a serious riotous outbreak on Great Inagua, the most southerly island, in August, during which one person was killed and 15 were deported by the rioters. Five shipping lines call regularly at New Providence, and semi-weekly air communication (daily in winter) is maintained with Miami. In 1936, imports were £967,240, principally from the United States (42·9 per cent.), Great Britain (24·6 per cent.), and Canada (13·4 per cent.); exports were £142,104 (United States, 36·8 per cent.; Canada 24·1 per cent.; Great Britain, 16·5 per cent.). The 'unfavourable' trade balance was offset by a growing tourist trade, valued at £1 million annually, and increasing property investments. Principal export commodities were sponges, fresh tomatoes (especially to Canada), hemp, and lumber. The monetary unit is the pound sterling. Colonial revenue for 1935–36 was £453,310, and expenditure, £426,909. In 1936, there were 166 elementary schools, an industrial school, and five secondary schools.

BAHREIN ISLANDS. During 1937 there was a steady increase in agriculture and in trade. Artesian wells were sunk to provide ample water in the towns, and for land which had previously been uncultivable. The Bahrein Petroleum Company opened a refinery in December capable of producing 25,000 barrels a day; and a causeway, one and a half miles long, between Manamah, the capital, and Muharraq, the adjacent island, has been completed except for one bridge. The ruler is H.H. Shaikh Sir Hamad bin Isa al Khalifah.

BAKER, GEORGE FISHER, American financier; born in New York, March 19, 1878; died in Honolulu Harbour, May 30, 1937. Since 1931 he had been chairman of the board of the First National Bank of New York; and he was a director of many of the largest American corporations, such as the American Telephone and Telegraph Company, General Motors Corporation, the United States Steel Corporation, and the New York Central Railroad Company.

BAKER, NEWTON DIEHL. American lawyer and statesman; born at Martinsburg, W. Va., Dec. 3, 1871; died in Cleveland, Ohio, Dec. 25, 1937. A biographical notice may be found in the *Ency. Brit.*, vol. 2, p. 944.

In 1928, he accepted appointment to the Permanent Court of Arbitration at The Hague in the hope of forwarding peace. His public services became even wider after he received a Distinguished Service Medal in 1929 for his war work. He headed the National Crime Commission, accepted membership on the National Law Enforcement Commission, was the recipient of numerous awards for public services, led the national committee for the mobilization for human needs during 1931–33, and was re-appointed to The Hague in 1935. A prominent candidate for the Democratic presidential nomination in 1932, he worked on early New Deal labour committees, but became critical of such measures as the

T.V.A., supreme court changes, and the Wagner Labor Relations Act.

BAKERY PRODUCTS: *see* BREAD AND BAKERY PRODUCTS.

BALANCE OF TRADE. The course of national balances of payments in 1937 was affected by a number of general factors: the rapid rise of world prices for raw commodities in the first four months of the year and their subsequent decline; the accelerated internal economic activity of manufacturing countries, especially under the stimulus of expenditure on arms; the efforts of certain countries to reduce their dependence on imported raw materials; the higher level of shipping freights as world trade expanded faster than the available tonnage; the wars in China and Spain, and other political disturbances. Currency movements seem not to have played as great a part as in earlier years; nor was there, in 1937, any outstanding migration either of long-term or of short-term capital.

United Kingdom.—Imports into the United Kingdom continued to expand, despite falling prices, from a monthly average of £65,710,000 in 1936 to £91,945,000 in Nov. 1937. Exports also increased, but not in such large measure; the debit balance of trade for the first 11 months of the year was £387,208,000 in 1937 against £311,022,000 in the same period of 1936. It was estimated that roughly £30 millions of the increased debit would be covered by higher shipping earnings (yielding £95 millions in 1936) and roughly £20 millions by bigger dividends on investments abroad (yielding £195 millions in 1936). As there was a simultaneous net import of about £80 millions of gold, Britain's liabilities to the outside world were plainly increasing faster than her external assets.

United States.—Both imports and exports of the United States showed a big increase. Retained imports, from a monthly average of $202 millions in 1936, rose to $296 millions in March. Higher prices and increased consumption both contributed to this movement. Exports increased from a monthly average of $201 millions in 1936 to $285 millions in May 1937. Both sides of the account then receded, but exports returned seasonally to a high figure in the autumn. Exports from January to September totalled $2,238 millions, against imports of $2,370 millions. In the same period there was a net import of $1,455 millions of gold. This was not the counterpart of a long-term capital movement; the net inward movement was only $231 millions to June 30, and in later months capital left the United States. To that date, however, there had been a net inflow of $708 millions of banking funds, enough to balance two-thirds of the payments for gold.

The Former Gold Bloc.—The effect of devaluation on France's balance of trade was not, as might superficially have been expected, a check to imports combined with a stimulus to exports. Imports rose faster than exports, from a monthly average of 2,117 million francs in 1936 to one of 3,347 million francs in the first nine months of 1937, the corresponding figures for exports being 1,288 millions and 1,871 millions respectively. This increase of 647 million francs in the monthly trade debit was offset by a great curtailment of exports of capital. Other former gold-bloc countries fared similarly. Thus the monthly average debit on the Netherlands' foreign trade rose from 22·5 million guilders in 1936 to 33·4 millions in the first nine months of 1937, and in Switzerland the corresponding rise was from 32·05 million francs to 48 millions. Belgium, which had devalued her currency a year before the others mentioned, also underwent a slight increase in her debit balance of trade early in 1937. The tendency of imports to rise faster than exports in industrial countries was a natural outcome of higher prices for raw products, and of increased internal activity, whether or not provoked by devaluation.

Scandinavia.—The Scandinavian countries may be taken as another typical group, their chief exports being timber, dairy products, and other high-class foodstuffs, with some industrial manufactures. Their currencies were all linked to the pound sterling. Denmark, Norway, and Sweden had the same general experience, namely, a sharp rise of imports towards the end of 1936 and the beginning of 1937, followed after an interval by an almost equal (in Sweden, a greater) rise of exports. The net result was a slight increase of their monthly debit balances of trade in the first nine months of 1937 compared with the 1936 average, thus: Denmark, 12·7 million kroner, compared with 8·7 millions; Norway, 41·6 million kroner, compared with 19·8 millions; Sweden, 14·7 million kronor, compared with 11·5 millions. These increased debits were probably fully covered by larger invisible income, notably shipping earnings.

Germany, Italy, Russia, etc.—In 1936, Germany had maintained a credit balance of trade averaging RM45 millions a month. Higher commodity prices caused some inroad on this, but Germany's export business shared fully in world trade revival, and in the first nine months of 1937 her average credit was RM34 millions. The Four-Year Plan of self-sufficiency had yet had little total effect on her balance of trade. Italy, on the other hand, failed to maintain her trading position, despite the devaluation of the lira. Her monthly average of exports rose from 455 million lire in 1936 to 855 millions in the first nine months of 1937, but imports more than doubled in value—from 501 million lire to 1,152 million lire a month. As a result, Italy's book balance on her exchange clearings changed from a credit of 529 million lire in Dec. 1936 to a debit of 253 million lire 11 months later. On the whole, the smaller countries of central and eastern Europe had a more favourable trading experience in 1937 than in 1936, a bigger surplus becoming available for debt service. Russia's position also improved, her imports being practically stabilized and her exports responding to favourable market conditions for wheat, oil, gold, etc.

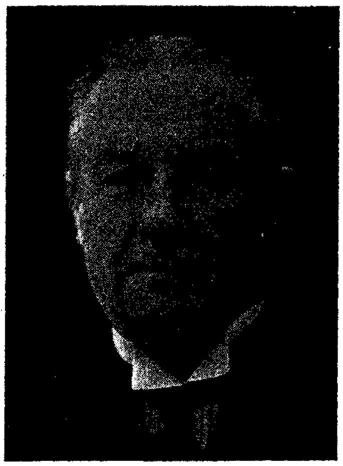
Australia, Argentina, etc.—The typical experience of countries exporting mainly foodstuffs and raw materials was a high level of exports in late 1936 and the first half of 1937, followed by a recession, while imports remained at an expanded figure, thanks to greater internal purchasing power. Thus, Australia's exports, which had totalled £A23,700,000 in April, May, and June 1936, rose to £A35,300,000 in the same months of 1937. By Sept. 1937, however, the increase was less than £1 million a month, while imports were £2,400,000 (sterling) higher than in Sept. 1936. New Zealand's position was similar. Argentina's exports were actually lower in Sept. 1937 than a year previously, and imports had almost overtaken exports; her credit balance in the earlier period, however, had been abnormally high. Although Brazil's export expansion was longer maintained, she, too, underwent a substantial and continuing rise in imports.

China and Japan.—Up to the outbreak of war, China shared in the general expansion of world trade, the monthly average of imports rising from $78·5 millions (standard dollars) in 1936 to $104·3 millions in the first seven months of 1937, while the export average rose from $58·8 millions to $81·7 millions. In the subsequent three months, imports averaged $42 millions and exports $53·7 millions.

High prices and defensive preparations caused a great expansion of Japan's imports early in 1937, but, on the other hand, her exports were well maintained despite the war. Monthly averages were as follows: Imports—1936, 225·2 million yen; Jan.–July 1937, 352·7 million yen; Aug.–Oct. 1937, 274·8 million yen. Exports—1936, 219·3 million yen; Jan.–July 1937, 253·3 million yen; Aug.–Oct. 1937, 285·2 million yen. For both countries it will be seen that the immediate effect of the war was to reduce purchasing power more than exporting power.

General.—There were, broadly speaking, two phases of the movement of world balances of trade and other international payments in 1937, corresponding to the movement of raw commodity prices. In the first period, the primary producing and debtor countries accumulated increased credits, part of which had to be used for higher dividend and interest payments. The second period marked a new equilibrium, with the trade advantage turning on the whole in favour of the manufacturing creditor countries, since the spending capacity of the other group remained at its expanded level, while imports of food and raw materials were costing less. (H. V. H.)

BALDWIN, STANLEY BALDWIN, 1st Earl, of Bewdley, Viscount Corvedale (1867–), British statesman (*see Ency. Brit.*, vol. 2, p. 967), was, following Mr. Ramsay MacDonald, Prime Minister from June 7, 1935, until his retirement on May 28, 1937, when (June 1) he was created a Knight of the Garter (Mrs. Baldwin being created G.B.E.) and (June 8) raised to the earldom. Lord Baldwin had been premier in four administrations, and for a longer period than any premier of recent times, Mr. Asquith excepted. His latter months of office were rendered exceptionally arduous by reason of the abdication (*see* Windsor, Duke of), and his duties in connexion with the coronation, and, after taking his seat in the House of Lords (June 9), he enjoyed a well-earned rest. On Nov. 5 he was given a civic reception at the Guildhall, London.



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EARL BALDWIN OF BEWDLEY

BALEARIC ISLES, THE. A group of four large and eleven smaller islands lying in the western Mediterranean off the east coast of Spain, to which they belong, and of which they form a province. The larger are Majorca (1,312sq.m.), Minorca (278sq.m.), Iviza (230sq.m.), and Formentera (35sq.m.); the total area is 1,935sq.m., and the estimated population at the end of 1934, 376,735. Palma, the capital, on Majorca, is 133m. by sea E. of Valencia, and 144m. S. of Barcelona. The only other town of importance is Port Mahon, Minorca, one of the finest harbours in the Mediterranean, and, unlike Palma, heavily fortified.

The islanders are racially akin to the Catalans, and, for the most part, speak a Catalan dialect; as in the rest of Spain, there is no State religion, but the overwhelming majority is Roman Catholic. The province's education and finances are regulated under the general Spanish law. Its productions include olives, almonds, figs, with other fruits, and cereals; among its minerals are lignite, sea-salt, and superphosphates; sheep- and pig-rearing are carried on, and cement and coke manufactured. The exports are chiefly fruits.

On the outbreak of the Spanish civil war in July 1936, all the islands, Minorca excepted, declared for the insurgents; within a few weeks Iviza and Formentera were taken by the Catalans, their attack on Majorca being a costly failure; but before the end of November, these islands were occupied by Italians as air and naval bases in the insurgents' cause. Questions were asked in the British House of Commons relative to this, and in the 'Gentlemen's Agreement' of Jan. 1937, Italy assured Great Britain that she had no intention of disturbing the *status quo* in the western Mediterranean. Months later, on Oct. 18, the insurgents' headquarters, in consequence of reports of Italian activities in the Balearics and of a rumour of a suggested Anglo-French occupation of Minorca, announced that no cession of the islands, nor any measure of foreign control therein, would be permitted.

Meanwhile, many 'incidents' had occurred: on March 30 the Government fleet shelled Majorca and Iviza; on May 24 and 26 Government 'planes bombed vessels in the harbour of Palma, killing six Italian naval officers and wounding others; and on May 30, the German battleship *Deutschland* was bombed off Iviza, with 26 killed and 71 wounded, an action which resulted in the bombardment of Almeria by German warships the following day. Early in August there was a recrudescence of air attack on vessels both north and south of the Balearics, and on Oct. 25, following an attack by an unknown 'plane on the Air France base in Minorca, France arranged for the convoy of all merchant ships from France to North Africa and for a warship to be stationed permanently off Minorca.

By early November, the Italian forces would seem to have evacuated Majorca, and Palma now became the chief Nationalist base for the blockade of the Spanish east coast and Minorca.

BALKAN COUNTRIES, LITERATURE OF: *see* Literature of Central and South-eastern Europe.

BALKAN ENTENTE, a regional political understanding which came into being on Feb. 9, 1934, between Greece, Rumania, Turkey, and Yugoslavia, by the signature of a 'Pact of Balkan Understanding' providing for a mutual guarantee by the contracting parties of all their Balkan frontiers, with consultation and a promise to abstain from independent action towards any Balkan Power not signatory to the pact. A secret Protocol provided for joint action if any signatory were victim of aggression by a non-Balkan Power, and a Balkan Power joined in the aggression; a further, still more secret Protocol, precised measures to be taken against Bulgaria if the eventuality arose.

A permanent council, permanent secretariat, and permanent economic council were established. The councils have met regularly; in moments of crisis, such as the murder of King Alexander of Yugoslavia, the desired unity of front has been maintained. The economic council has developed much activity in discussing the economic and financial relations between the signatories, improving communications, developing tourist traffic, etc.

It was no secret that when the pact was negotiated, Yugoslavia was most anxious to include Bulgaria, who found herself, however, unable to guarantee frontiers which she believed to be unjust. Yugoslavia subsequently negotiated a separate treaty with Bulgaria (*see* Bulgaria). The chief misgivings felt in Greece were due to the fear that she might be involved by the pact in war with Italy; the Italo-Yugoslav Agreement (*see* YUGOSLAVIA) largely removed these fears. For texts *see Documents on International Affairs*, 1933, pp. 408–9, and 1934, pp. 298 ff. *See* also *Survey of International Affairs*, 1934, pp. 508 ff. (C. A. M.)

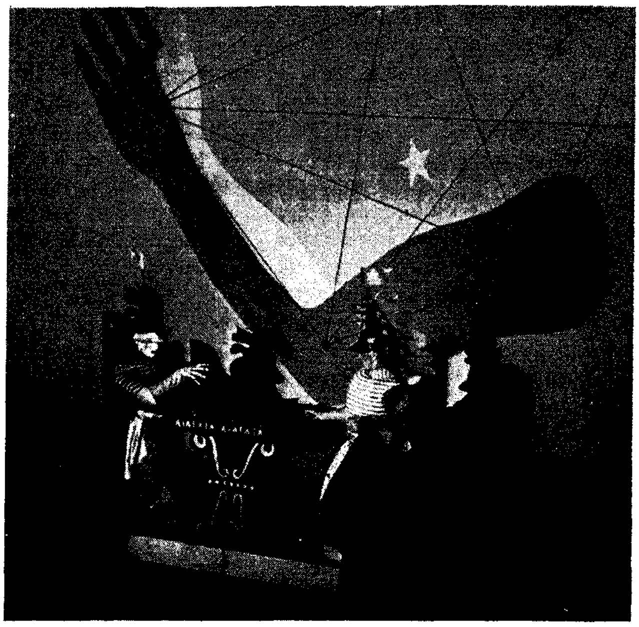
BALLET, understood as co-ordinated dancing and miming by a troupe of dancers, not the intimate art of an individual (*see* DANCING), enjoyed an increasing vogue in Europe and America in 1937. While the traditional classical style held its own, much contemporary work was seen. Examples indigenous to America were Catherine Littlefield's creations, as directrice of the Philadelphia Ballet, of *Barn Dance* (fantasy on popular airs and figures of the pre-jazz era), *Terminal* (railway-station burlesque, to 'hot' music), and a new, cumulative version of *Bolero* (Ravel). This very well-drilled but spirited company visited Paris and London, while Col. de Basil's *Ballets Russes* were seen in America. Agnes de Mille, the American character-dancer, besides giving solo seasons in London, participated in English productions.

In Europe, countries with State-aided ballet, such as Austria, Lithuania, and Denmark, maintained their traditions; Poland entered the field. The Moscow State schools trained excellent dancers, but artistic enterprise was ruled by propaganda. Italy produced nothing new of distinction for an exquisite Roman *ballerina*. In France, at the Paris Opéra, Serge Lifar's *Icare* and *David Triomphant* won success; he also made some interesting experiments in the substitution for music of mere rhythmic and percussive sounds. The cream of the year's art, international and native, was seen in London.

Here the former was represented by the *Ballets Russes* (Massine, *maître*), who gave their fourth summer season at the Royal Opera House, Covent Garden, as before, collaborating in certain operas towards the close of the 'grand' season, and returning thither in the autumn in brilliant revivals such as *Petrouchka* and *Scheherazade* (supervised by their creator, Fokine) and *Le Coq d'Or* (reworked as ballet only); and by René Blum's *Ballets de Monte Carlo* (Fokine, *maître*) at the Coliseum. The allied activities of the English school of ballet centred around Sadler's Wells Theatre, the Ballet Club at the little Mercury Theatre, and the *Ballet Rambert* (season at the Duchess Theatre), giving scope to Ninette de Valois, Marie Rambert, Frederick Ashton, and others, as choreographers.

A significant recent development has been the 'setting to motion' of recognized masterpieces of music, symphonic and other, led by Massine with his *Choreartium* (Brahms's Fourth Symphony) and *Symphonie Fantastique* (Berlioz), presented in a perfected version; Mozart's G minor Symphony is engaging his attention. The tendency remains general, as witness Fokine's *Les Elements* (Bach's B minor Suite) and *Les Elfes* (Mendelssohn's *Midsummer Night's Dream* Overture and Violin Concerto), and Lichine's *Francesca da Rimini* (Tchaikovsky's Tone-poem); even Mahler's *Kindertotenlieder* and Schubert's *Death and the Maiden* Quartet were pressed into service.

Nevertheless, the outstanding achievement of the year was *Checkmate*, an original conception by Ninette de Valois and Arthur Bliss, the English composer, who worked out a chess-board duel between Love and Death. This was first produced by the Sadler's Wells company on their visit to Paris in June, who thus secured an international reputation after an existence of only five years; it scored a great success later in London. Other noteworthy productions by Sadler's Wells were *Wedding Bouquet* (a satire on Edwardian manners by Lord Berners and Ashton, with words for chorus by Gertrude Stein) and *Les Patineurs* (a Meyerbeer-Ashton essay based on skaters' movements in the manner of *Les Sylphides*).



From Merlyn Severn's 'Ballet in Action' (John Lane)

PROLOGUE TO 'CHECKMATE', A BALLET BY NINETTE DE VALOIS AND ARTHUR BLISS, PRODUCED BY THE SADLER'S WELLS COMPANY

The Markova-Dolin company flourished under a new *maîtresse*, Bronislava Nijinska, Susan Salaman's circus-frolic, *Show Folk*, and Keith Lester's *David* here typifying modern work. A curious innovation, which awaits the development of a specialized technique, was ballet skated on ice at Covent Garden. (H. Fw.)

On Jan. 24, at the age of 67, Nicolas Legat died in London, where he had been teaching for some years. He was a famous dancer and teacher of the old Imperial Russian Ballet, and among his pupils in Russia he numbered Kchessinska, Preobrajenska, Trefilova, Pavlova, Karsavina, and Nijinsky.

In November Prince Serge Wolkonsky died in Richmond, U.S.A., at the age of 79. He was Director of the Imperial Theatres in Russia in 1901–02, and was an ardent reformer of the ballet.

On Nov. 25, Miss Lilian Baylis, who had done so much for ballet at Sadler's Wells, died at the age of 63 in London.

BALTIC COUNTRIES, LITERATURE OF: *see* LITERATURE OF NORTHERN EUROPE, THE.

BALTIMORE, the metropolis of Maryland, is situated at the head of navigation on the Patapsco river, an estuary of Chesapeake bay. It has an area of 91·93sq.m., and a population of 855,127 (United States estimate, 1937), of which 688,290 are white and 166,837 coloured. Birth-rate (1937), 14·5; mortality rate (1937), 13·4. The shore line of the harbour inside the city limits is 37·7 m., and there are many square miles of deep-water anchorage immediately below the city.

During 1937, the Pan-American Airways chose the Baltimore municipal airport as the base for its regular Bermuda service in conjunction with Imperial Airways, and regular flights began Nov. 14. The year saw, also, the first appointment of a negro to the police force, the adoption of voting machines for all elections, the continuing substitution of buses for trolley cars, and the razing of hundreds of buildings in the older parts of the city to make space for the parking of automobiles. The city's bonded indebtedness (Nov. 1937) was $182,434,579; the assessed valuation of taxable property (1938), $1,959,566,194; appropriations for municipal purposes for 1938, $47,414,286. A programme ($32 millions) of public works, including water works, bridges, street widenings, and extensions to facilitate motor traffic, is in progress. The city maintains a symphony orchestra supported by municipal appropriation, with Werner Janssen as guest conductor for the 1937–38 season.

Water-borne commerce remains the backbone of Baltimore's economy. Foreign trade (1937): exports, $107,677,251; imports, $100,059,188. Coastwise trade (Atlantic and Gulf) increased 33 per cent. over 1936, and intercoastal trade (Atlantic and Pacific), 50 per cent.

BALUCHISTAN. A mountainous country lying on the Arabian Sea, between Iran and India. The total area is 134,638sq.m., and the total population 868,617. The tract is divided into: (1) British Baluchistan (area 54,229sq.m.; pop. 463,508, of whom 87 per cent. are Moslems), a minor Indian province with its capital at Quetta, and (2) a number of semi-independent States under British influence, of which the chief are Kalat and Las Bela. The country is inhabited by two distinct races, the Brahui and the Baluch, the language of the former providing anthropologists with a problem of peculiar interest. The province is under a chief commissioner, responsible to the Government of India, and has not yet been made autonomous, though a movement is on foot for enlarged political rights. On May 1, 1935, the town and cantonment of Quetta were ravaged by an earthquake which killed 30,000 out of the 70,000 inhabitants. The seat of the administration was temporarily moved to Karachi, but active measures were pursued during 1937 to restore the devastated area.

(ME.)

BANK FOR INTERNATIONAL SETTLEMENTS. In comparison with previous years, the business activities of the bank in 1937 have shown a marked increase. To some extent this is reflected in the balance sheet, which rose from 604·9 million gold Swiss francs at the end of Nov. 1936 to 653·3 million gold Swiss francs at the end of Nov. 1937; and this increase has occurred in spite of the fact that the holdings of such currencies as have been subject to depreciation represent a lower gold value. The volume of operations has increased as a result of the large movements of funds between different countries and the uncertainty that, especially at certain periods, prevailed on the foreign exchange and gold markets. Gold is being used increasingly for monetary reserves and for the settlement of international balances; this means that central banks have to procure foreign exchange against gold and gold against foreign exchange in order to be able to intervene on their own exchange markets; the bank has had its share of the business resulting from such operations. It should also be mentioned that the bank has devoted increased attention to the possibilities of financing foreign trade, particularly in relation to countries with exchange control; it has been possible to arrange certain facilities to aid exports by means of credits obtained from central banks in addition to the resources of the bank itself. Though the amounts involved are still moderate, the transactions that have been set on foot can be regarded as an attempt to find suitable methods of providing credits for export trade when ordinary financing meets with great difficulties. The net profits for the fiscal year April 1936 to March 1937, after making allowance for contingencies, amounted to a little more than 9 million gold Swiss francs, approximately the same as those for the preceding year.

The bank has continued to serve as a centre of contact between central banks and, in a period of great uncertainty as to the future of the monetary mechanism, this contact has been greatly appreciated, as is shown by the fact that none of the central bank governors who are members of the board was absent from a meeting during the year. At the general meeting in May 1937, Dr. L. J. A. Trip, governor of the Nederlandsche Bank, resigned his position as president of the Bank for International Settlements, and Dr. J. W. Beyon was appointed in his stead. By a modification of the statutes, a separate chairman, in the person of Sir Otto E. Niemeyer, was appointed to preside over the meetings of the board.

BANKING. The Bank of England is the central bank of Great Britain, and as such acts as the banker of the government and the commercial banks. Commercial banking in England and Wales is mainly in the hands of the 11 clearing banks (members of the *London Clearing House*). Their names and average position for Nov. 1936 and 1937 are as in the table, all figures being in millions of pounds.

The first five of the clearing banks, known as the 'big five', operate branches all over the country. The next three operate mainly in Lancashire, the next two in London, and the National Bank largely in Ireland. The general tendency during 1937 was for the banks to experience a greater demand for advances, due to the expansion of trade, particularly in the heavy industries. In the absence of any big expansion in their cash and deposits, they had to reduce their discounts and investments in order to meet this growing demand for loans. Scotland has her own branch-banking systems, though many of the Scottish banks are affiliated to the English banks. Ireland, both in Ulster and in the Free State, has her own banking system.

There are also offices in London belonging to Dominion and foreign banks. Foreign banking and finance is also conducted by the London accepting houses. Bills of exchange, both Treasury and commercial, are handled in the London money market, consisting of all the above institutions and also of the discount houses and bill-brokers.

Since 1932, the policy of the government, carried out by the Bank of England (*q.v.*), has been to make credit cheap and plentiful. The gold reserves of the Bank of England have greatly increased since that year, and so this expansion of credit could be carried out without any need for heavy purchases of securities by the Bank. During the past year the Bank of England, in execution of the government's policy, has made little change in the size of the credit base. The result is the very small increase in clearing bank cash, shown in the table below.

Australia.—The Commonwealth Bank is the central bank of the Dominion, but it also does a certain amount of commercial banking. The commercial banks are known as the 'trading banks'. Both the Commonwealth Bank and the trading banks hold a large part of their cash reserve in sterling in London, and these are known as 'London Funds'. Their size, and so the whole supply of credit in Australia, depends upon Australia's trade balance. During the year to June 1937, there was an increase of about £20 millions sterling in London funds, which made credit easier. There is no organized money market in Australia, and the banks lend the bulk of their funds to their customers. The main event in 1937 was the issue of the Australian Banking

London Clearing Banks
(£ *millions*)

Bank	Deposits		Cash		Call and Short Loans		Discounts		Investments		Advances	
	1936	1937	1936	1937	1936	1937	1936	1937	1936	1937	1936	1937
Barclays	421	424	43	44	23	23	68	54	110	105	177	198
Lloyds	397	403	40	41	34	31	52	50	112	112	155	168
Midland	493	502	52	52	28	24	92	90	124	114	193	217
National Provincial	308	309	31	31	28	19	41	34	88	85	121	138
Westminster	360	363	37	37	27	22	61	56	110	111	126	139
District	78	80	8	8	9	9	7	4	29	30	27	31
Martin's	91	93	9	9	6	7	3	3	36	30	38	44
Williams Deacon's	37	37	4	4	7	6	2	1	13	12	12	14
Coutts	24	25	2	2	3	3	1	2	9	9	11	10
Glyn, Mills	40	38	4	4	10	10	1	1	10	12	15	12
National	39	38	3	3	6	6	2	1	15	14	15	16
Total	2,287	2,311	233	235	180	160	329	297	656	634	890	986

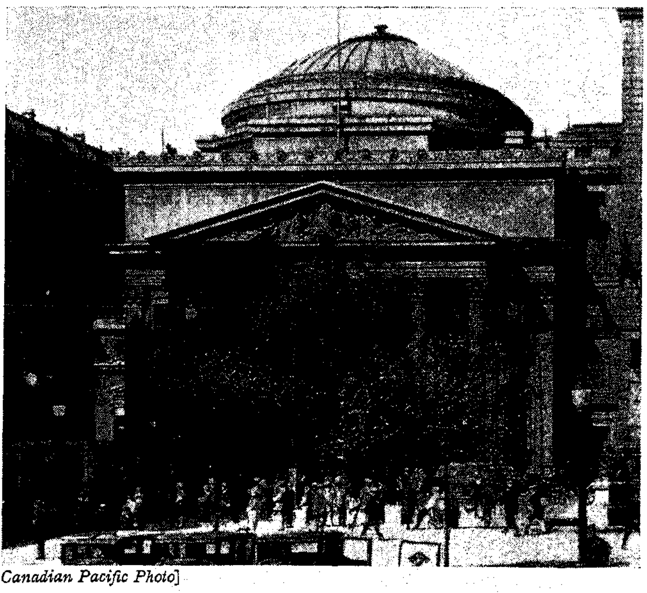
Commission's Report, which made numerous recommendations on the relations between the government, the Commonwealth Bank, and the trading banks.

Two main points of controversy arose. The first was that of the proper relation between the government at Canberra, the Commonwealth Bank, and the trading banks. The second was that of the function and ownership of London funds. Both points to some extent merge in the basic question of whether the Commonwealth Bank is to be partly a commercial bank, or whether it is to be entirely a central bank. (N. E. C.)

Canada.—Under the Canadian Constitution, banking and control over banks are vested solely in the National Government. There are, therefore, no true Provincial banks. The Bank of Canada, which obtained its charter in 1934, is now (1938) a national bank as the result of recent amendments assigning a majority of its shares to the minister of finance. The Bank is empowered to buy and sell securities of the Dominion, the Provinces, the United States, and Great Britain, and, to a limited extent, the securities of other British Dominions and France. Short-term securities of the Dominion and the Provinces may be re-discounted. It may also buy and sell certain classes of commercial paper, and may re-discount them when endorsed by a chartered bank. Short-term advances may be made to the Dominion and Provincial governments and to chartered banks. It may buy and sell gold, silver, nickel, and bronze coin, gold and silver bullion, and foreign exchange.

The Dominion government notes have been replaced by notes of the Bank of Canada. The notes of the chartered banks are being gradually replaced by Bank of Canada notes, and by 1944 the chartered banks will be allowed to issue their own notes to an amount equal to only 25 per cent. of their paid-up capital. It seems probable that, in course of time, even this limited right to issue notes will be withdrawn. The Bank of Canada must maintain a reserve of gold equal to not less than 25 per cent. of its total note and deposit liabilities in Canada. It now holds all the gold reserves in the nation. It acts as a bank for the government and for the chartered banks, not for the public. The chartered or commercial banks now (1938) number only 10 as compared with 28 in 1867. They are allowed to have branches in any part of Canada and in any other country which permits it. At present (1938) the number of branches in Canada is 3,398 ; in other countries 145. The chartered banks must maintain with the Bank of Canada a reserve equal at least to 5 per cent. of their deposit liabilities. They must make monthly reports to the government, and they are subject to regulation by government inspectors. (X.)

South Africa.—The banking system consists of the Reserve Bank and a limited number of branch-banking systems. One such system (Barclays D.C.O.) also operates in other parts of the Empire. Up to the end of 1932, when South Africa abandoned the gold standard and linked on to sterling, credit conditions were very difficult. Since then, however, South Africa has passed through a period of great prosperity. This was due, first to the rise in the price of gold, due to the depreciation of the South African pound, and second, to general recovery at home and abroad. This prosperity, coupled with a better price for her gold shipments, has made South Africa's credit position very easy, with a noticeable expansion in the total resources of her banks. Comparing 1932 and 1937, deposits have risen from £51·3 to £59·7 millions, and discounts and advances from £21·9 to £28·3 millions.



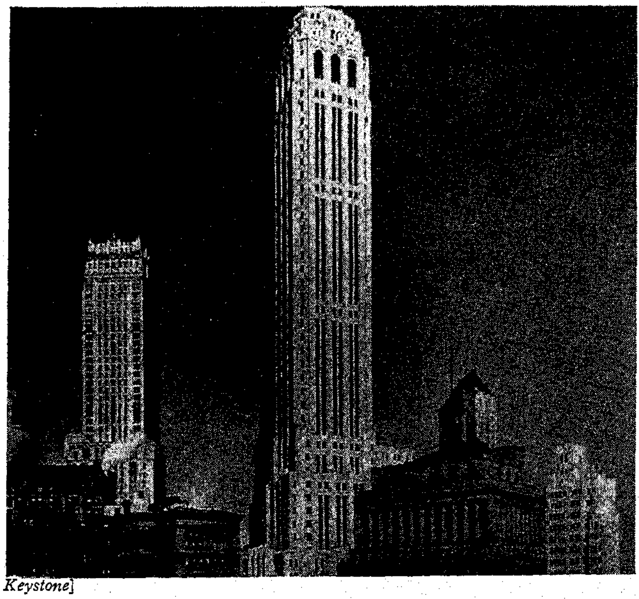
Canadian Pacific Photo]

HEAD OFFICE OF THE BANK OF MONTREAL, PLACE D'ARMES SQUARE, MONTREAL

India.—The structure of Indian banking is still very complex, but during the past few years it has been simplified and co-ordinated in certain important respects. The principal change was the foundation of the Reserve Bank of India in 1935. This bank performs for India all the normal functions of a central bank, and is also bound to buy and sell sterling on demand at a pegged rate of 1*s.* 6*d.* per rupee. Thus it also acts as the supplier of foreign exchange, a function formerly performed by the government. The Imperial Bank of India, which formerly carried out many of a central bank's functions, is now developing more into a commercial bank.

India's foreign trade is largely financed by the 17 exchange banks. The internal banking structure is very complex. There are 105 joint-stock banks with paid-up capital and reserves of at least one lakh (£7,500), and those with paid-up capital and reserves of at least 5 lakhs (£37,500) must keep balances with the Reserve Bank. There is a whole system of co-operative banks. Finally, as intermediaries between the banking system and the peasant in need of credit, there are numerous native bankers, such as the local mahajan or bania, and the shroff who discounts for the mahajan. The chain then leads on via the co-operative, indigenous, or joint-stock bank to the Reserve Bank. The real need is for more widespread banking facilities and for educating the people to use the banks instead of hoarding their wealth. In this way India could make full use of her own wealth and credit at rates much cheaper to the peasant than they are to-day.

Europe.—Banking in many important European countries differs from British banking in several respects. First, there is not always a clear-cut division between central banking and commercial banking. In France, for example, the Banque de France (*q.v.*) is both a central bank and a commercial bank. Next, with the exception of Holland, there is no well-developed money market as exists in London. Another important point of distinction is that in many countries there are various classes of banks. Thus France has her *banques d'affaires* as well as her ordinary commercial banks of deposit, and the *banques d'affaires* make long-term investments or participations in industry. Germany has systems of commercial banks, savings banks, *girozentralen* (which now act as bankers to the savings banks), and mortgage banks. Many other countries have mortgage banks, whose primary function is to finance land purchases, and in many countries banks of all kinds are readier to engage these resources in industry than is the custom of British banks. Most countries have branch-banking systems, but again there are exceptions, as in the case of the Cantonal banks in Switzerland. Finally, the use of cheques is not nearly so widespread on the Continent as in England and the United States, and many payments are either made direct in cash or by bills of exchange which are met in cash.



Keystone]

NEW YORK CITY: THE BANK OF MANHATTAN ON LEFT AND THE CITY BANK FARMERS TRUST BUILDING CENTRE

Thus, the whole banking system of the Continent is much less definite in character than in England and, in the absence of a money market, is not so susceptible to control. Generally during 1937 the tendency was in the direction of greater liquidity. Thus, Holland and Switzerland, and to a lesser degree France, benefited from the devaluations of Sept. 1936. Credit conditions in Germany have now become extremely liquid, owing to the recovery of 1932 onwards, and the methods of financing it by means of short-term borrowing. Scandinavia has been prosperous, and this again has meant liquidity. On the other hand, banking on the Continent is not only in the hands of a few large, well-defined institutions. There are a host of small houses, who can barely claim to be called banks, and many of these engage in exchange speculation. This has been fostered by the general feeling of insecurity on the Continent, by the reluctance to invest money at home, and by the desire to transfer it to and fro about the world in search of security. The ebb and flow of this money has created problems for Continental bankers as well as for those of England or the United States; for to the Continent it has at one time meant stringency and at another a superabundance of funds. Hence banking in many parts of the Continent has not been free from anxiety, but on the whole the position at the end of 1937 was sound. (N. E. C.)

United States.—Structural trends evident in 1935 and 1936 continued during 1937 to decrease the number of commercial banks in operation in the United States. As a result of failures, voluntary liquidations, and consolidations, the number of such banks fell from 15,116 on Dec. 31, 1936, to 14,878 on Nov. 30, 1937. The number of mutual savings banks in operation on Dec. 31, 1937, was 562, one less institution than was operating at the end of the previous year.

Most significant of the bank asset trends during 1937 was the increase in commercial loans, accompanied by a decrease in security holdings. This trend, which reversed depression tendencies, was strong during the first 10 months of the year, but was arrested by the business recession during the autumn. Bank holdings of direct and fully guaranteed obligations of the United States government are estimated to have declined by about 10 per cent. during the year, while holdings of other securities fell more than 5 per cent. Commercial, industrial, and agricultural loans are estimated to have increased by about 14 per cent. Loans to brokers and others on securities fell off sharply in the last three months of the year. The liquidation of security holdings occurred almost entirely in larger correspondent banks, in part to meet the increased commercial and industrial demand for credit, but principally as a consequence of the demand of country banks for funds to meet increased reserve requirements. Security holdings of country banks actually increased during the year.

Demand deposits, including deposits of the United States government, declined by an estimated $1,500 millions during the year. An increase of about $600 millions in time and savings deposits is estimated to have occurred during the period. The activity of deposits, as reflected in debits to individual deposit accounts, continued at a level far below that of the 1920's. For activities of the Board of Governors of the Federal Reserve System and the Treasury in the field of money and credit control during 1937, *see* FEDERAL RESERVE SYSTEM.

The banks' net earnings for 1937 were probably higher than for 1936. Net profits, however, were probably lower in 1937 than in the preceding year. Interest rates continued at the low levels which have characterized the money market during the past three years. Member banks held more than $1,000 millions of excess reserves at the end of 1937. Banks continued to benefit from the savings in money costs made possible by elimination of interest payments on demand deposits and reduction of the rates allowed to be paid on time and savings deposits. Income from service charges, commissions, and fees continued to increase. Profits on securities and recoveries on charged-off assets, however, were substantially below the amounts realised in 1936.

From the beginning of deposit insurance to Nov. 30, 1937, 174 insolvent insured banks were placed in receivership or merged with the aid of loans by the Federal Deposit Insurance Corporation. The 270,000 depositors in these banks, having total deposits of $73,395,000, were protected to the extent of $69,760,000, or 95 per cent. of their claims, by insurances, offset, pledge of security, preferment, or through loans and purchase of assets by the Corporation. All but 621, or less than one-half of 1 per cent. of the depositors in the suspended banks, were fully protected against loss. Of the 174 banks 123, with deposits of $35,421,000, were placed in receivership, and 51, with deposits of $37,974,000, were merged with other banks with the aid of loans and purchases of assets by the Corporation amounting to $16,376,000.

The National Association of Supervisors of State Banks was active during 1937. This association provides a clearing-house for the several State and territorial supervisors of banking, and co-ordinates their efforts to work in the interest of the State banking systems. The Association's Executive Committee met in Washington on several occasions to discuss with legislators, the Board of Governors of the Federal Reserve System, and the Federal Deposit Insurance Corporation matters affecting State banks. The committee currently is working towards the enactment of uniform minimum operating standards for all State banks, a step which ultimately will improve the working basis of all classes of banks.

The ability of bank managers as well as their knowledge of banking processes should benefit from 1937's awakened consciousness of the possibilities of research and education. Announcement was made during the year of a banker-sponsored research project into all aspects of the financial structure on a scope not approached since the investigations of the National Monetary Commission 30 years ago. Research into general and specialized aspects of banking was placed on the agenda of nearly every State association of banks, and was given greater prominence than ever before by national professional groups. Supplementing the periodic meetings of State associations, there were established in many instances during the year 1937 schools of varying lengths sponsored jointly by the associations, the State departments of banking, and the State universities.

No major federal legislation affecting banks or banking was enacted during 1937. Early in the year William G. McAdoo, senator from California, introduced two bills. One of these would authorize the establishment of branches by a national bank anywhere within the boundaries of the Federal Reserve district, which includes the bank's home office. The second bill aimed at limitation of bank stock ownership by holding companies. Wright Patman, representative from Texas, introduced a bill which provided principally for transfer of ownership of the Federal Reserve banks from member institutions to the United States Government. None of these bills was called to a vote in either house of Congress in 1937.

BANK OF ENGLAND. The recent structure of the Bank of England dates from 1928 when the Bank of England and the currency note issues were amalgamated under the control of the Bank. Subsequent history includes the suspension of the gold standard in 1931 and the establishment of the Exchange Equalization Account in 1932 Some of its 1937 functions are:

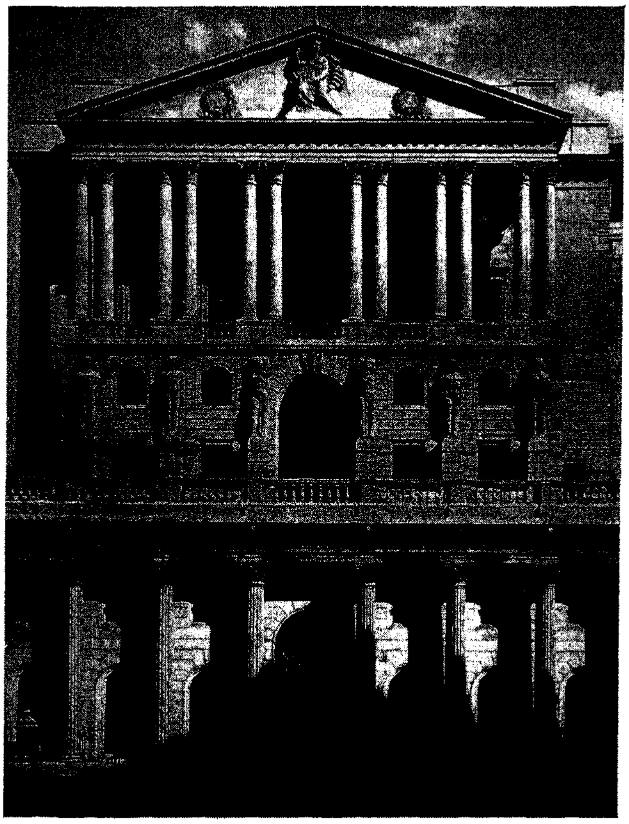
(*a*) It is the custodian of the nation's gold reserve. Since 1932, part of this gold is held by the Exchange Equalization Account, but the account is operated by the Bank under the general direction of the government.

(*b*) It has the sole right of note issue in England and Wales. Its notes are legal tender and not convertible into gold.

(*c*) It is the government's banker and adviser upon monetary matters. It is also responsible for the administration of the National Debt.

(*d*) It is the 'bankers' bank'; that is, it holds part of the cash reserves of the joint-stock and other commercial banks.

(*e*) It is the controller of the supply and cost of credit. By fixing bank-rate it roughly determines the general level



Humphrey and Vera Joel]

THE PORTICO OF THE RECONSTRUCTED BANK OF ENGLAND. ARCHITECTS: SIR HERBERT BAKER, R.A., AND H. T. SCOTT, F.R.I.B.A.

of short-term interest rates. By buying or selling securities it can expand or contract commercial bank cash and the general supply of credit. It is the lender of last resort—that is, it will always lend to approved borrowers, at its own price, when other sources of credit fail.

(*f*) It is an unofficial but effective link between the government and the City. It is also in contact with foreign central banks and the Bank for International Settlements.

During 1937, the way in which it exercised most of these functions can be summarized by saying that it maintained an ample supply of credit and stable monetary conditions in both internal and external relations. At the end of 1936, it bought £65 millions of gold from the Exchange Equalization Account, simultaneously reducing the fiduciary note issue by £60 millions. This relieved the account of surplus gold without expanding overmuch the internal credit base. During the gold scare of the early summer, the Bank bought gold both for the Exchange Equalization Account and also for itself. The Christmas expansion in the note circulation was prevented in two ways from restricting the supply of credit. First, the fiduciary note issue was temporarily enlarged by £20 millions, so as to provide the Bank itself with the extra Christmas currency. Next, as notes were drawn by the public out of the joint-stock banks, the Bank acquired additional government securities which always had the effect of replenishing the joint-stock banks' cash.

The effect of some of these operations is illustrated in the following table:

BANK OF ENGLAND

(*£ millions*)

	Dec. 16	Jan. 13	Apr. 7	June 23	Nov. 10	Nov. 24	Dec. 22
	1936	1937	1937	1937	1937	1937	1937
Gold . . .	313·6	313·7	313·7	326·4	326·4	326·4	326·4
Fiduciary Note Issue	200·0	200·0	200·0	200·0	200·0	220·0	220·0
Note Circulation .	467·7	455·0	469·9	483·7	485·6	480·4	509·3
Reserve . . .	46·6	59·0	44·6	43·6	42·4	67·5	38·0
Government Securities * . . .	89·1	83·2	101·1	98·0	103·9	76·2	96·5
Bankers' Deposits .	96·2	106·7	94·8	95·0	90·9	83·6	98·2

* In banking department.

A comparison of the returns for April 7 and June 23 shows the Bank's gold purchases during the summer gold scare. The returns for Nov. 10 and 24 show the reinforcement of the Reserve from the increase in the fiduciary note issue—effected by the transfer of £20 millions of government securities from the banking department to the issue department. The return for Dec. 22 shows the Christmas expansion in the note circulation, and how the consequent decline in the Reserve was offset by fresh acquisitions of government securities. The result was that bankers' deposits were able to gain the full benefit of the Dec. 1 War Loan dividend payment, and so rose, and did not shrink during those four weeks from Nov. 24 to Dec. 22. (N. E. C.)

BANKRUPTCY. In Great Britain there were no statutory changes in the Bankruptcy Acts 1914 and 1926 or the Deeds of Arrangement Act during 1937.

The failures in 1937 showed a small improvement over 1936, but it does not seem possible that we shall ever see the failures reduced to negligible figures. There appears to be a definite point around which the failures fluctuate. There has been a small yearly improvement since 1927 with the exception of a rather sharp set back in 1931 and 1932 when the total failures rose to over 8,000.

The total failures in the United Kingdom and Ireland during 1937 totalled just short of 5,600, an improvement of 1·02 per cent. over 1936. Of this total 2,084 were under Deeds of Arrangement. The chief failures in their order were as follows:

Building	588
Groceries and Provisions	482
Farmers	315
Drapers and Hosiery	254
Plumbing, Painting and Gasfitting . .	237
Private Persons	208

The wholesale trades accounted for 7·85 per cent. and were predominantly resident in the London district. This was an increase over 1936 of 5·04 per cent. The heaviest county outside of the London area was Lancashire for failures in the wholesale section, one of the effects of foreign political troubles.

There were several businesses in which there were no failures, the principal ones being bankers, brewers, music publishers, and shipwrights.

To summarize and publish figures in terms of money values would be to give misleading figures as to loss of investment and circulation of business credit because we should really take into consideration the realization at sales and dividend to creditors, declared very often years after the failure.

In the United States, the present decade has been no exception to the rule that bankruptcy laws are the products of the periods of financial depression. The multitude of recent statutes in this field are, however, noteworthy in their divergence from traditional objectives of bankruptcy. Since 1933 debtor relief has taken on wholly new aspects, both as to the kind of debtors who may avail themselves of the benefits of bankruptcy and as to the nature of the relief. A period of intensive legislative activity was climaxed in 1937 by the introduction of a bill for the comprehensive revision of the entire Bankruptcy Act (the so-called Chandler Bill, H.R. 8046, 75 Congress, 1st Session).

The variety of persons for whose benefit bankruptcy legislation has been enacted since 1933 ranges from farmers to railroads, and includes ordinary business, industrial and utility corporations. Such local taxing agencies as municipal corporations, and drainage, irrigation, and levee districts, can effect a settlement of their defaulted obligations with the aid of the Bankruptcy Act.

The element common to all of these statutes is their resort, at least in part, to the device of composition. Composition may be a settlement of debts by a part payment, or involve an extension of time for payment, or it may be both. Its characteristic feature lies in the binding sanction which the Bankruptcy Act gives to such agreements; if a majority of the creditors agree to an offer of composition submitted by the debtor, dissenting minorities are compelled to accept the same treatment. Compositions have been possible under Section 12 of the Bankruptcy Act since 1898 but have been limited to the treatment of unsecured debts. Until the advent of these statutes, bankruptcy laws left unimpaired the lien of secured creditors. Under Section 74 such liens may be impaired by extension of the time for payment. And their more serious impairment as to amount is possible and valid under the other of these statutes, when accomplished by a composition. An even more radical innovation in the treatment of secured debts contains provisions which do not turn on the consent of creditors. In essence they grant to the insolvent farmer a three-year moratorium on his defaulted mortgage, on payment of a reasonable rental These measures were held constitutional in the outstanding bankruptcy decision of 1937, Wright *v.* Vinton Branch of Mountain Trust Bank, 300 U.S. 440.

These expanding conceptions of the bankruptcy power will perhaps leave their major impress in the field of corporate reorganization. In this connexion the Chandler Bill, previously mentioned, undertakes the extensive revision of Section 77B, with particular emphasis upon remedying its deficiencies in respect to the protection of investors. In the field of ordinary bankruptcies, the bill would clarify definitions, jurisdiction, and practice, and eliminate present delays and expense in administration. The fundamentals of the present Act are not disturbed.

BANQUE DE FRANCE. The Banque de France is the central bank of France, but it also does a fair amount of commercial banking business through its branches all over the country. It was founded by Napoleon in 1800, and up to July 1936 was governed by a governor and two vice-governors, nominated by the finance ministry, and 15 regents appointed by the shareholders. Only the 200 largest shareholders had the right to attend the annual meeting.

In July 1936 an Act was passed altering the constitution of the Banque de France. The regents were replaced by a board of 20 directors (together with governor and vice-governor). Ten of these directors are civil servants ; five represent industry, trade, agriculture, labour, and the consumers' co-operatives ; the remaining five represent banking (two representatives), the staff of the Banque de France, 'small traders', and the National Economic Council. Including the governors, 13 out of the 23 directors are civil servants, and so the government now has control over the Bank.

The position of the Bank's loans to the government was also regularized at that time, and the government took additional borrowing powers. In place of Frs. 14,000 millions of rediscounted Treasury bills held by the Bank in June 1936, the Bank had outstanding in Nov. 1937 Frs. 27,000 millions of provisional advances to the government.

The gold held by the Bank was revalued in Oct. 1936, and again in July 1937, in accordance with the two devaluations of the franc. The profit on the earlier revaluation was used mainly to constitute the French Exchange Fund, an equivalent quantity of gold being withdrawn from the Bank for that purpose. The profit on the later revaluation was used to establish a special fund for the support of the *Rentes* market, but no gold was then taken from the Bank. Between June 1936 and Nov. 1937, the Bank's gold stock increased in value from Frs. 53,953 millions to Frs. 58,932 millions. The note circulation rose from Frs. 84,804 millions to Frs. 90,948 millions and private deposits from Frs. 6,180 millions to Frs. 17,860 millions. These latter increases were mainly due to the new Government borrowing.

(N. E. C.)

BAPTIST CHURCHES, THE. The Baptist Union of Great Britain and Ireland has, through its affiliated churches, a membership of 293,198, a decrease of about 3,000 on the year 1936. Full statistics of the Baptist Church in the British Isles for 1937 show that 3,224 churches, with seating accommodation for 1,439,687 people, have a membership of 392,535 and 401,906 Sunday School pupils. A year previously the membership was 396,531 and Sunday School pupils numbered 418,483. The Baptist World Alliance, a federation of national unions, has some 12 million communicant members in 70 countries the world over. The Strict and Particular Baptists have in England and Wales about 20,000 members.

The president of the Baptist Union, 1937–38, is Mr. H. L. Taylor (of Bristol), and the Annual Assembly of 1937 took place at Manchester in April. It was reported that the Baptist Forward Movement, founded for the purpose of raising £1 million, was steadily making ground in an effort for church extension, it being claimed that since the World War 8 million people have settled in the new housing areas in Great Britain. The international work of the young people's department is being developed, and correspondence is freely exchanged between home Sunday School members and those in other lands. Young People's Fellowships have shown a marked increase, and a training course for Sunday School teachers has been started in London. The Council was fully represented at the World Conference on Faith and Order at Edinburgh.

The Rev. M. E. Aubrey, C.H., general secretary of the Baptist Union and Moderator of the Federal Council of the Evangelical Free Churches, headed the Free Church representatives at the Coronation ceremony in Westminster Abbey.

The Rev. F. J. H. Humphrey, D.S.O., is president-elect of the Union 1938–39, and the Assembly of 1938 takes place in London.

In the United States, the Baptists of America, totalling 10,119,379 members, are divided into two main bodies : the first, three groups with 9,608,689 members ; the second, 15 miscellaneous groups with 510,690 members. In the first division the Southern Convention has 24,671 churches and 4,482,315 members ; the National (coloured), 22,000 churches and 3,650,044 members ; the Northern, 7,616 churches and 1,476,330 members. According to latest statistics, the Southern received 92,898 new members during the year ; the National, 85,000 ; the Northern, 17,519. The Southern and Northern reported gains in church contributions and missionary benevolences—$2,300,120 and $795,577 respectively.

Each Convention took action respecting certain social problems. Through its Social Service Commission, the Southern reaffirmed 'our unchanging condemnation of mob violence in all forms', declaring, 'we shall not be satisfied or content until lynching shall cease and mob violence shall be completely banished'. Resolutions denounced war and commended the League of Nations as 'a very great force and influence for steadying the international situation and averting war'. 'Child marriages' were deplored, and 'the laxity and inadequacy of existing statutes in the several States for the regulation of marriage'.

The Northern Convention pledged itself 'to work for a constitutional amendment providing that Congress shall not have power to declare war involving the sending of our Army to foreign soil . . . until . . . authorized by vote of the American people taken in a national referendum'. In industrial affairs, it resolved 'that we continually sensitize our consciences to the wrongs and injustices inherent in our social and economic life . . . affirming our conviction that Christ's principle of the Golden Rule and his concern for the building of the Kingdom of God . . . lay upon us . . . the compulsion to work for a living minimum wage . . . to be set by law'. Each Convention appointed a committee on public relations, which were to co-operate 'when principles held alike by Northern and Southern Baptists are in any way endangered'. Perhaps the most significant action of these three Conventions was their decisions to participate in the World Conferences at Oxford and Edinburgh, July 12–16 and Aug. 3–18, 1937, respectively. At the Lausanne Conference in 1927 these Conventions had declined to be represented. At each of the 1937 Conferences the Southern Convention had two duly appointed delegates. The Northern had eight official delegates and seven associates at Oxford, five delegates with three alternatives at Edinburgh. The National had one delegate at Oxford and one visitor at Edinburgh.

BAQIR SIDQI PASHA, Iraqi soldier and statesman; born at Askeri, near Kirkuk, in Kurdistan, 1890; died at Mosul, Aug. 12, 1937. At the age of 18 he was a staff officer in the Turkish army, and during the War he served in the Dardanelles campaign. In 1931 he became a colonel in the Iraqi army, with command of the northern zone; and in the following year attended courses in England at the Staff College, Camberley. In 1933 King Feisal dismissed Baqir Sidqi from his post in consequence of his responsibility for the massacre of unarmed Assyrians; but he was shortly afterwards restored and made pasha. In Nov. 1936 he brought off a successful military *coup d'état,* was appointed permanent chief of the Iraqi General Staff, and became military dictator of his country. Together with his colleague, Major Muhammad Ali Jawad, he was assassinated on the Mosul aerodrome by an Iraqi soldier, reported to be a relative of Jafar Pasha, defence minister in the cabinet overthrown by the 1936 *coup.*

BARBADOS. Most easterly of the British West Indian colonies; language, English; capital, Bridgetown (pop. 54,234); governor, Sir Mark Young. The area is 166sq.m.; population (official estimate, 1936), 188,294, with 71 per cent. negro, 22 per cent. mixed, and 7 per cent. white. Government is administered by an appointed governor and council, and a representative assembly.

On July 27, 1937, there were 'minor disorders' in country districts, in which two people were killed, three critically injured, and twelve other men and four women injured. H.M. cruiser 'Apollo' landed marines, and tension was eased by the governor's offer to investigate and attempt to remove the grievances of the rioters.

Barbados has 24m. of railways and ample external shipping communication. Imports in 1936 totalled £2,004,484, chiefly from Great Britain (42·7 per cent.), Canada (14·1 per cent), and the United States (10·4 per cent.); exports, chiefly sugar (65 per cent.), molasses, and rum, were £1,493,335, largely to Canada (56·2 per cent.) and Great Britain (32·2 per cent.). Sugar is the chief crop, with cotton production on the increase. The monetary unit is the pound sterling. Revenues for the year 1936–37 were £83,143 and expenditures, £460,870. Barbados has 126 elementary schools (enrolment 26,117) and several secondary schools. Codrington College, near Bridgetown and affiliated to Durham University, has high standing, and provides university training.

BARCELONA, a city and seaport of Spain, capital of a province of the same name, and former capital of Catalonia, is situated on the north-east coast, about 73m. S. of the French frontier and 430m. by rail E.N.E. of Madrid; pop. (est. Dec. 31, 1934): 1,148,100.

Barcelona's history during 1937 was dominated by the Civil War, the city having been, since the outbreak of war (July 18, 1936), a stronghold and rallying-point of the government forces, and, since Nov. 1, 1937, the temporary seat of the government, this having moved from Valencia for economic and strategic reasons. In the early months of the war, it was the scene of more than one anarchist 'terror', in which churches were rifled and priests slain, and early in Feb. 1937, a number of spies, including Italians, were captured. On April 4, after a week's crisis, the Catalonian president formed a new cabinet; but on May 5, street fighting having taken place with over 100 killed, this was replaced by a Directorate of Four. The town suffered much from Insurgent air-raids, but no hostile force ever came near it on land.

BARLEY: *see* GRAIN CROPS.

BARODA. An important Mahratta State in western India, lying at the head of the Gulf of Cambay; area 8,164sq.m.; population 2,443,007, of whom 88 per cent. are Hindus. The capital city is Baroda (pop. 112,860), and the Maharaja is H.H. Sir Sayaji Rao Gaekwar, entitled to a salute of 21 guns. The chief minister or Diwan is assisted by an executive council, and the State has a legislative council comprising non-official members. Baroda has, since 1906, had the distinction of a system of free and compulsory primary education; and the high ratio of 28 per cent. of the men (7 per cent. of the women) is returned as literate. The language is Gujarati, and the cultivation is similar to that of the northern part of the Bombay Presidency. There are 14 cotton mills in the State with about 5,000 looms. (ME.)

BARRIE, SIR JAMES (MATTHEW), Bt., O.M. British novelist and dramatist; born at Kirriemuir, Forfarshire, May 9, 1860; died in London, June 19, 1937. *See* his biography in the *Ency. Brit.,* vol. 3, pp. 140–1. From 1930 till his death Sir James was chancellor of Edinburgh University, and since 1928 he had been president of the Society of Authors. His only recent drama of any importance was the film play *The Boy David* (1936), in which Elizabeth Bergner played the rôle of David. It cannot be said to have enhanced the author's reputation.

Russell, London]

THE LATE SIR JAMES BARRIE, O.M.

BARTÓK, BÉLA (1881–), musical composer, was born at Nagyszentmiklós, Hungary (now Yugoslavia), and is the recognized leader of the advanced movement in Hungarian music. A pupil of Hans Koessler at Budapest, early in his career he devoted himself to the study of Magyar folk-songs, of which he and Kodály (a fellow-pupil) collected several thousands—an activity reflected in many of his works in the form of arrangements and adaptations. It would, however, be a narrow view to regard him as a nationalist composer, for, apart altogether from his importance to Hungarian music, he is a composer of great originality and an outstanding figure in contemporary music generally. His works are characterized by their independence, their dynamic vigour, and their spontaneous expressiveness; they include *Bluebeard's Castle* (opera), *The Wooden Prince* (ballet), *The Miraculous Mandarin* (mimeplay), and a *Cantata Profana* (choral), with numerous orchestral compositions (including two piano concertos, five string quartets, and two violin sonatas), and much piano music. His most recent works are *Music for Strings,* *Piano, Celesta, and Percussion* (first performance, Basle, Jan. 1937), and a sonata for two pianos and percussion, which has been selected for the Festival of the International Society for Contemporary Music to be held in London in June 1938. Bartók is a remarkable pianist, plays his own concertos, and frequently gives recitals of his own works.

BASEBALL. The results of the chief championships in the United States in 1937 were as follows. In the World Series the New York Yankees (winners of the American League pennant) beat the New York Giants (winners of the National League pennant) by 4 games to 1. The fifth annual All-Star game between teams representing the American League and the National League was won by the former at Washington, D.C., on July 7, by 8 games to 3. The Little World Series of the minor leagues was won by the Newark (N.J.) Bears, who beat the Columbus (Ohio) Red Birds by 4 games to 3. Yale University won the Eastern Intercollegiate Baseball League, and the University of Illinois won the Conference baseball championship.

As a result of many tours by American major league stars, the popularity of baseball has continued apace in Japan, where it bids fair to become the national sport.

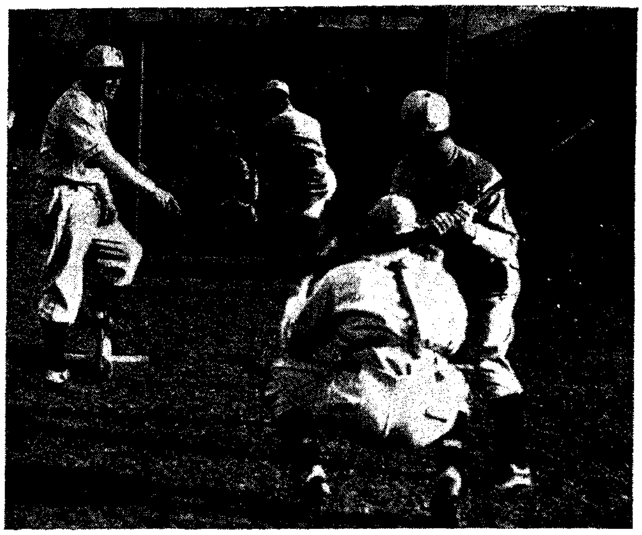
The National Baseball Association was founded in Great Britain by Mr. John Moores after a visit to the States during 1933. On its formation it was composed of thirty clubs in the Lancashire district, which agreed to conform to the Canadian rules. Since that time, and in each succeeding year, the popularity of the game has grown to such an extent that the 1937 season opened with over 400 affiliated clubs, while various Air Force depots adopted the game as a compulsory form of physical recreation, and at one camp over 60 teams were playing on 27 diamonds marked out on their playing fields. Two hundred boys' club and school teams were competing against each other in league and friendly games in various parts of the country, and Canadian coaches were imported to teach the younger generation the finer points of the game. Twenty women's teams were also in existence. Baseball's 'Battle of the Roses' was the occasion of a broadcast and running commentary by the B.B.C., while baseball was also included in many of the sports talks on the air.

The successful introduction of the game to many big works and factories was yet another stepping-stone in the history of baseball. Professional baseball also was played by 20 teams in various areas, and attracted an average attendance in the region of six thousand. On one occasion, at the Headingley cricket ground at Leeds, the total number of spectators present was 18,000. Several cup competitions were promoted, in addition to the 27 amateur leagues which were in existence. The National Challenge Cup attracted gates ranging from 6,000 to 12,000, at the grounds in the various areas where the respective rounds were played. Schools for umpires were established in numerous districts, many umpires being culled from the ranks of football referees.

At the close of the 1937 season, baseball was established on a firm basis in Great Britain.

BASIC ENGLISH: *see* UNIVERSAL LANGUAGES.

BASKETBALL originated in 1891, is played in 58 countries, and is growing in popularity. Until 1937, the ball was put in play at the beginning of each period and after each goal was made by tossing it up between two opposing players, thus giving each team an equal opportunity of obtaining the ball. The new 1937 rules read: 'After a goal from the field, any player of the team scored upon shall put the ball in play from any point out of bounds at the end of the court where the goal was made'. Other changes were: blocking was differentiated from screening—in blocking there must be personal contact; and the centre line is to be treated as any boundary line in determining in which court a player is standing. Changes in women's rules allow a player to take the ball away from an opponent and permit a substitute to communicate information immediately.



Wide World Photos]

PHILADELPHIA. TEACHING BASEBALL TECHNIQUE WITH THE AID OF MIRRORS: COACH (LEFT) SHOWING STRIKER AND CATCHER THEIR FAULTS

BASUTOLAND. Basutoland is entirely surrounded by territory of Union Provinces: Orange Free State, Natal, and the Cape. Area, 11,716sq.m., lying between 28° 35′ and 30° 40′ S. lat., and 27° and 29° 30′ E. long. Altitude 5,000 to 11,000ft. Basutoland came under British rule in 1868 at the request of the great chief Moshesh, after wars against the Orange Free State. It is legally a colony, administered, under the South African high commissioner, Sir William Henry Clark, K.C.S.I., K.C.M.G., by a resident commissioner. Chiefs administer justice in their own courts. Capital, Maseru.

Population (census 1936): Bantu, 660,650; Europeans, 1,434; Coloured, 1,600. Elementary education is available to all, and over 70 per cent. of school age are enrolled: there are one government and ten mission institutions for higher grades. Missions have been established for a century. The oldest, the Paris Evangelical Mission, forms practically an indigenous Christian Church.

Recent History.—A loan of £160,233 was received in 1935 from the Colonial Development Fund for anti-erosion work, and a further loan in 1936 for an ecological survey and grassland experiments.

Trade and Communications.—The territory is linked with the railway system of South Africa by a short branch line to Maseru. Since 1936, regular road transport service by South African Railways has been established. In the greater part of this mountainous territory transport is by pack animals. Chief exports are wheat, wool, and mohair; total exports (1936), £302,193; imports, £712,125.

The deficit between exports and imports is filled by wages earned on the Rand mines, on which most male Basuto spend some time. At the close of 1936 45,399 were so employed. Experiments are being made in growing strong varieties of wheat, for which there is a demand in the Union, and food crops, such as peas and beans.

Banking and Finance.—The Standard Bank of South Africa has a branch at Maseru. The currency is that of the Union of South Africa. The native poll-tax is at the rate of 25*s.* for each male, and for each wife after the first, with a maximum of £3 15*s.* Income tax is at the rate of 2*s.* in the pound for individuals, and 1*s.* for companies. Revenue in 1936 was £321,896, and expenditure £298,909.

(W. M. MA.)

BAYLIS, LILIAN MARY, British theatre manager; born in London, May 9, 1874; died in London, Nov. 25, 1937. In early life she taught the violin and other stringed instruments in South Africa, but, after returning to England in 1898, joined her aunt in the management of the Old Vic Theatre in south-east London. She became sole manager of this theatre in 1912, and won her lasting fame by staging all Shakespeare's plays and many other classics, as well as opera in English, at prices within the means of the humblest theatre-goer. In 1931 she took over the management of the re-opened Sadler's Wells Theatre in addition, and made of this a North London counterpart of the Old Vic. She was made a Companion of Honour in 1929.

BECHUANALAND PROTECTORATE is bounded S. and E. by the Union of South Africa, N.E. by Southern Rhodesia, N. by Zambezi and Chobe rivers, and W. by south-west Africa. Area estimated at 275,000 sq.m.: mean altitude, 3,300ft. Bechuanaland became a British protectorate in 1885 at the request of its chiefs under the leadership of the famous Khama. It is administered by a resident commissioner, under the high commissioner for South Africa, Sir W. H. Clark, K.C.S.I., K.C.M.G. The chiefs retain their status and hold tribal courts: headquarters of administration is at Mafeking, within the Union borders.

Population (census 1936): Africans, male 129,259, female 130,805; Europeans, male 1,064, female 835. A portion of each unit of tax goes into a native fund for social services, from which £11,717 was voted in 1936 for education. Until 1933, the Bamangwato tribe entirely supported the Khama Memorial School. The tribes of the protectorate are Christians. The London Missionary Society, the chief religious body, has nearly a century of work in the territory.

Trade and Communications.—Communications are primitive. The South African Railways line to Southern Rhodesia passes along the eastern border, but about 50m. west of the railway the tracks become unsuitable for motor traffic.

Agricultural production is limited by lack of rainfall. Chief exports, 1936: frozen meat 2,866,826lb., cattle £105,072, sheep and goats £9,452, butter £11,457, hides and skins £23,777, kaffir corn £21,852. Mining for gold and silver is done on a small scale in the Tati district; value of output, 1936, £117,061. Imports (1936) were £363,270, and exports £347,858.

The postal system is controlled, subject to authority of the resident commissioner, by the postmaster-general of the Union. Telegraphs and telephones are owned and worked by the Southern Rhodesian Government. Revenue for 1935–36 was £132,913, and expenditure £210,113. Excess of expenditure over revenue is met by Imperial grants-in-aid. The native poll-tax is £1 8*s.* per annum, and the same for each wife after the first, with a maximum of £4 4*s.*

Defence.—The Bechuanaland Protectorate Police Force, under direct command of the resident commissioner, constitutes the sole defence force.

(W. M. MA.)

BEECHAM, SIR THOMAS, Bt. (1879–), British musical conductor and impresario, was educated at Rossall and Wadham College, Oxford; he inherited considerable wealth, spent lavishly on operatic and other musical enterprises, and became known as a brilliant conductor. In 1937 Sir Thomas, who is artistic director of Covent Garden Theatre, continued there the series of Sunday concerts inaugurated by him in 1936, besides conducting some of the broadcast symphony concerts from Queen's Hall, London. During the year he visited Berlin, where his conducting of the State Opera met with warm appreciation, and in October conducted at the Leeds Festival, having first made a speech in which he advocated more publicity for important musical events. A provocative orator, he had earlier told the Critics' Circle that there was no such thing in England as intelligent musical criticism.

Sir Thomas was knighted in 1916, and in October of that year succeeded his father, Sir Joseph Beecham, the famous pill-maker, as second baronet.

BEE-KEEPING. A revival of bee-keeping during the past 10 years in Great Britain has resulted in doubling honey production, which in now about 40,000 hundredweight annually. The annual *per capita* consumption of honey is estimated at about four ounces in Great Britain, while in the United States, where there are between 600,000 and 800,000 bee-keepers, it is estimated to be as high as 14 ounces. There are no reliable figures as to the total production in North America, since so much of it is sold and consumed locally, but except in British Columbia, California, Texas, Louisiana, Kentucky, Tennessee, and Arkansas, the 1937 crop was below normal and under the 1936 production by percentages ranging from 30 to 60 in different States and Provinces. For some years, and especially since the more general use of motor lorries, many American bee-keepers have taken their apiaries to Florida and

Sport & General]

WIRELESS LESSON ON BEE-KEEPING. PUPILS FROM A SCHOOL MEET ON THEIR ALLOTMENT, WHERE THEY KEEP TWO HIVES, TO LISTEN other Southern States during the winter months. The profitability of this practice is now disputed, except as to its recreational value to the bee-keeper. Investigations by the *American Bee Journal* indicated that in many sections of Canada and the United States colonies entered the winter months with inadequate food supplies.

BEER : *see* BREWING AND BEER.

BEETS AND BEET SUGAR : *see* SUGAR.

BEHNCKE, PAUL, German admiral; born Aug. 13, 1866; died Jan. 4, 1937. He was an uncompromising advocate of an unrestricted submarine blockade of England during the World War. In Aug. 1915 he was placed in command, from the *König*, of the 3rd squadron of the High Seas Fleet; and as such was severely wounded in the Battle of Jutland. After the 1918 revolution he resigned; but from 1920 to 1924 was chief representative of the Navy in the Defence Ministry.

BELGIAN CONGO, THE, a Belgian colony in central Africa, bounded S. by Northern Rhodesia and Angola, W. and N. by French Equatorial Africa (with a narrow strip giving access to the South Atlantic), N. by the Anglo-Egyptian Sudan, and E. by Uganda, Tanganyika Territory, and Nyasaland. Included with the Belgian Congo are, as a mandate, the former German East-African districts of Ruanda and Urundi. Governor-general, Pierre Ryckmans (appointed 1934).

Area and Population.—Area: Congo 927,000sq.m.; mandated territory 20,550sq.m. Population: Congo, Europeans 18,683, natives about 11 millions; mandate, Europeans *c.* 890, natives *c.* 3,385,000. Leading towns: Léopoldville, the capital (4,447), Elizabethville (5,841), Stanleyville (3,419), Coquilhatville (1,653). There are 14 schools for Europeans, and 11 State schools and 4,217 subsidized schools for Africans.

Trade and Communications.—The Belgian line from Katanga connects with the Benguela railway to the Portuguese port of Lobito Bay. The Haut Katanga railway gives through rail connexion from Capetown to Port Francqui. The Congo River is the great natural highway, with lengths of railway circumventing the rapids. Air transport plays an increasingly important part.

The chief product is copper, mined in the Katanga province. Labour for the Katanga mines is drawn chiefly from the populous Ruanda-Urundi districts. The mines are notable for an experiment in 'stabilizing' a resident population of African workers. Production in 1935 was 107,682 tons. Other minerals are radium, and diamonds (3,812,023 carats in 1935). There are European coffee and cocoa plantations, and native cotton plantations which produced (1935) 76,333 tons. Exports in 1935 totalled frs. 1,202,943,444, and imports frs. 613,573,782.

The unit of currency is the franc, equalling one-fifth of the belga. The Banque du Congo Belge issues notes and copper-nickel coins. There are four other banks. Expenditure in 1935 was frs. 677,729,364, and revenue frs. 578,227,254, showing a deficit of frs. 99,502,110.

In August 1937 discussions took place at Léopoldville between the Belgian authorities and the defence minister of the Union of South Africa regarding a projected air service between Johannesburg, Léopoldville, and Kisumu. The Belgian budget estimates for 1938 omitted the usual provision for an annual subsidy to the Congo, and it was stated that the necessary assistance would in future be given in some different form. An increase in the Congo Army, and the creation of a Colonial Air Force, were under discussion in Belgium at the end of 1937.

BELGIAN LITERATURE. Perhaps the most significant feature of 1937 has been, on the one hand, the attempt to be independent of Paris, and, on the other, the honours paid to Belgian literature by Paris. Thus, many books have appeared in Brussels, particularly from the presses of the Belgian 'Renaissance du Livre'. The *Académie royale de langue et de littérature françaises de Belgique*, with greatly increased activities, was, at the end of the year, received with much ceremony in Paris by the *Académie française*. The *Prix Goncourt* was awarded for the first time to a Belgian, namely Charles Plisnier. The *Congrès des écrivains étrangers de langue française*, held in the summer in Paris, was presided over by a distinguished Belgian, Maurice Wilmotte. Finally should be recorded the literary homage of the whole world, offered, with the co-operation of the Belgian Broadcasting Corporation, to Maurice Maeterlinck on the occasion of his 75th birthday.

Nineteen thirty-seven has been a year of considerable fertility. In poetry should be cited Bodart's *L'office des ténèbres*, Pierre Bourgeois' *Poèmes*, Carême's *Petite Flore*, du Dy's *A l'amie dormante*, Heux's *Symphonie Apollon*, Kochnitzky's *L'ermite entouré de feux*, Thiry's *Marchands* (containing short stories also), and Vivier's *Au bord du temps*. *Les Cahiers blancs*, a review devoted to poetry, philosophy, and high intellectualism, was founded at the beginning of the year by a group of young writers.

Belles-lettres and history were also represented in large number. Maeterlinck published *L'Ombre des Ailes*, Lameere studied *L'Esthétique de Benedetto Croce*, and de Reul *L'œuvre de D. H. Lawrence*. Laurent wrote an erudite book on *La Draperie des Pays-Bas en France et dans les Pays méditerranéens*. Pirenne's *Mahomet et Charlemagne*, Moulin's *De Robespierre à Lenine*, and two books on King Albert, one by Cammaerts and the other by d'Ydewalle, should be indicated. Modern literature is studied by Gilsoul in an important book, *La Théorie de l'Art pour l'Art chez les écrivains belges de 1830 à nos jours*, and by Goffin in *Rimbaud vivant*. Poupeye writes on *Les Théâtres d'Asie*, and the 'Profils littéraires belges' has been enriched by several studies of contemporary authors. Father Maréchal published his collected thoughts on mysticism, in *Études sur la Psychologie des Mystiques*.

Amongst many novels, the following may be chosen: Charles Plisnier's *Faux-passeports*, Bosschere's *L'obscur à Paris*, Marie Gevers' *La Ligne de Vie*, Tousseul's *La Roche de la Mère-Dieu*, Franz Helens' *Le Magasin aux Poudres*, and two war books—Deauville's *Les dernières Fumées* and Linze's *Enfants bombardés*. Others include Aubermont's *L'arbre creux*, Burniaux's *Rose et monsieur Sec*, Closson's *Le scribe accroupi*, Madeleine Bourdhouxe's *La Femme de Gilles*, Gilbert's *Courrier d'Asie*, and Libert's *Cappelle au Champs*. Of books dealing with modern problems, there are Clausse's *Mesure des Humanités*, A. Pasquier's *Arc en ciel sur l'Amérique*, and Corman's *Salud Camarada*.

There were many notable works published in the Flemish language. In poetry should be mentioned Helderenberg's *Dooitendans*, Verbeeck's *De Dwaze Bruit*, Vertommen's *Peillood*, and van de Wijgaert's *DePurperen Vlock*. Teirlinck wrote an important play, *De Ekster op de Galg*. Among the numerous novels the following were outstanding: Elschot's very well written *Pensionen*, Roelants' *Alles Komt terecht*, de Pillecijn's *Schaduwen*, Streuvels' *Levensbloesem*, Walschap's *Een Man van Goeden Wil*, and Ridwit's *Landrotten*. Two collections of short stories must not be omitted: Toussaint van Boelaere's *De Doode die zich nietverhing* and Berghen's *De Kleine Isa*. (S. L. En.)

F.S.R., Cerely]

OLD LACE-MAKER, CARRYING ON A TRADITIONAL INDUSTRY, PHOTOGRAPHED IN BRUGES IN 1937

BELGIUM (Fr. *La Belgique* ; Flem. *België*), north-west European kingdom, member of the League of Nations. Bounded N. by Holland, E. by Germany and Luxemburg, S. by France, and W. by the North Sea. Capital, Brussels (*q.v.*). Ruler, King Leopold III (*q.v.*). National flag, black, yellow, and red, in equal vertical stripes.

Area and Population.—The area is 30,506 kilometres (11,775sq.m.), divided into 9 provinces, thus :

Province	Area (sq. m.)	Population (1935 estimate)	Density (per sq. m.: 1935)
ANTWERP . .	1,104	1,224,337	1,109
BRABANT . .	1,267	1,745,357	1,378
FLANDERS, EAST .	1,147	1,181,728	1,030
FLANDERS, WEST .	1,248	946,862	759
HAINAUT . .	1,436	1,253,012	873
LIÉGE (with Eupen and Malmédy) .	1,525	971,937	637
LIMBURG . .	930	397,610	428
LUXEMBOURG .	1,705	222,808	131
NAMUR . .	1,413	356,289	252

The census population (Dec. 1930) was 8,092,004, an increase of 0·84 per cent. per annum (1935 figures: 8,299,940—4,103,573 males ; 4,196,367 females). There is full religious liberty, no Church being established. A majority profess Roman Catholicism ; Protestants, Jews, and Anglicans are represented.

There are two main stocks, the Walloons, speaking French (42 per cent.), and the Flemings, Flemish, allied to Dutch ; a small proportion speak German. The educated Belgian usually knows all three languages, and often English.

At least one primary school must be maintained by every commune, at its expense, relieved by contributions from the State and province. In 1935, 8,599 primary schools recorded 968,193 pupils ; in 1934, 150 State secondary schools (100 for boys), 44,859 ; in 1935–36 the universities of Brussels, Louvain, Ghent (from 1930 a Flemish university), and Liége, 10,727.

Leading Cities.—The largest town is Brussels (exceeding 1,250,000), followed by (1935 populations) : Antwerp (273,772), Ghent (165,269), and Liége (162,272). Mechlin, Borgerhout, Deurne, and Bruges exceeded 50,000, and seven others 40,000 each.

History.—Government is in the hands of the King and a parliament of two chambers, and is administered by a prime minister and cabinet of 14 ministers. Universal adult suffrage and proportional representation are in force. The complement of the Chamber of Representatives, fixed by law prior to the elections of May 1936, was 202 ; the parties thereafter stood thus : Socialists, 70 ; Catholics, 63 ; Liberals, 23 ; Rexists, 21 ; Flemish Nationalists, 16 ; Communists, 9. In the Senate (167) proportions were similar.

The passage in June of the Bill granting an amnesty to separatist Flemings, in respect of their efforts, during the World War, to divide Flanders from Belgium, released forces leading eventually to the downfall of the government. The Flemish Nationalists severed their pact with the Rexists. Ex-service-men's associations appealed to the King for a referendum on the amnesty question, declined on grounds of unconstitutionality. M. Léon Degrelle (Rexist), whom M. van Zeeland, the Catholic prime minister, had defeated at an April by-election, levelled personal accusations at him and other ministers, one of whom replied with a successful action for slander. Liberal opinion forced another minister's resignation, and, notwithstanding a vote of confidence, passed in September after his return from a mission of economic exploration to the United States, M. van Zeeland resigned on Oct. 25 from the premiership and parliament, seeking freedom to investigate the affairs of the National Bank, and to clear himself of alleged complicity therewith.

Attempts to form a cabinet were protracted. Not till Nov. 24 did M. P. E. Janson (Liberal ; formerly minister of justice ; age, 65) take office as premier, supported by 6 Socialists, 5 Catholics, and 2 Liberals—the first Liberal ministry since 1884.

In domestic affairs a significant event was the rejection by the Socialist Party of the Communists' 'United Front.' As to foreign relations, King Leopold's 'neutrality' conversations in London (March) were followed by the release of Belgium from her reciprocal Locarno obligations, but with renewal of the Anglo-French guarantees against aggression. Later a German Note guaranteed the inviolability of Belgium. The King paid other visits to England (November, State ; December, private). A year's trade agreement was signed with the Union of South Africa, and one with France allocating traffic between Channel ports. Belgium's Oslo concessions (*see* NORWAY) were extended to France and the U.S.A.

Trade and Communications.—Though 1935 saw a slight drop, more than half the land was under cultivation, pasturage and cereals leading. Among materials derived from natural resources, the output of wrought steel was the most valuable ; this and pig-iron showed a continual rise to 1936. Coal production, after a drop in 1932, increased steadily till 1935.

The 1930 figures showed close upon two million persons engaged in industries, in the following order: metals, textiles, mining, building, transport. More than half a million were commercially employed. In 1936, imports totalled frs.21,505,682,000 (£146,300,000), and exports frs.19,944,275,000 (£135,700,000); an increase in both cases. Anglo-Belgian trade rose by 29 per cent. in exports from Great Britain, and by 17·5 per cent. in imports into Great Britain of iron and steel bars, flax, glass, bricks, cotton piece-goods, zinc, etc.

At Jan. 1936, there were 107 ships in the mercantile marine (247,344 tons). Road and railway facilities showed little change since 1935, when the Brussels-Antwerp line was electrified. Telegraphs and telephones showed slight increases. In 1935, 216 radiograph stations handled 22,056 messages; the (external) air services carried 65,728 passengers and 1,414,272 kilogrammes of merchandise.

Finance and Banking.—The franc continues the unit of domestic currency, but the use of the belga (= 5 paper francs; at par, 35 belgas = £1), stabilized (March 31, 1936) at 72 per cent. of its former gold content, is obligatory in foreign exchange transactions.

The 1937 budget showed an income of frs.10,736,424,000 (£73,037,000; increase: £2,088,700), rather under one-third raised by direct taxation, and expenditure of frs.10,565,569,000 (£71,180,000; increase: £686,700). Direct taxation averages frs.370 per head over the entire population. On Sept. 30, 1936, the total public debt was frs.55,799,000,000.

The National Bank, privileged to issue currency, had, on Feb. 11, 1937:

	Assets	Liabilities
Gold and silver .	3,740,388,000 belgas	Notes in circulation: 4,493,282,000 belgas.
Securities .	1,355,861,000 belgas	Current accounts: 822,030,000 belgas.
Totals .	5,096,249,000 belgas	5,315,312,000 belgas.

In the savings bank on Dec. 31, 1935, there were 5,566,414 accounts, totalling frs.10,808,660,000.

Defence Forces.—The army (part voluntary, part conscript; 18 months' service with the colours) had (1936) 4,460 officers and 63,000 other ranks; the air force 210 aeroplanes. The military expenditure provided was frs.886,400,000. The police had 157 officers, 6,289 other ranks. There is no navy, but one fisheries protection vessel is maintained.

Wide World Photos]

DR. BENEŠ

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BENEŠ, EDWARD (1884–), President of the Czechoslovakian Republic. For a biography, *see Ency. Brit.*, vol. 3, pp. 402–3. From the formation of the Provisional Government in 1918 until he succeeded Masaryk as president, Dec. 18, 1935, M. Beneš was foreign minister; he was one of the founders of the Little Entente (*q.v.*), a signatory of Locarno (1925), and in 1935 president of the Council of the League of Nations, of which he was always a staunch supporter. A lifelong Socialist, M. Beneš was much occupied during 1937 in maintaining the democratic status of his country and in resisting attempts at Nazification by Henlein and the Sudeten Deutsch Party (*see* CZECHOSLOVAKIA).

BENGAL PRESIDENCY. One of the largest of the provinces in British India; area 77,521sq.m.; population 50,114,002. Its capital is Calcutta (*q.v.*); and the only other city of any importance is Dacca (population 138,518). Hindus constitute 43 per cent. of the population and Mohammedans 55 per cent.; the latter being largely concentrated in the eastern districts and forming a poor and illiterate peasantry. The province contains 28 civil districts, under the governorship of Lord Brabourne, who was transferred from Bombay in 1937. There is a legislative assembly of 250 members and a legislative council (second chamber) of 64 members. The cabinet (11 ministers) is a coalition not under the influence of the Congress, the premier being Mr. A. K. Fazl-ul-huq. Bengali is the mother-tongue of over 46 millions of the population; and the standard of education is moderate, 15 per cent. of the men being literate in their own vernacular, and under 3 per cent. of the women. There are, however, 68 colleges in the province, and over 70,000 schools, with 2·9 million students under instruction.

Out of the total area, just under one-half, or 24 million acres, is under cultivation, and less than 6 per cent. is irrigated, the rainfall being usually copious and regular. Rice is by far the dominant crop, occupying over 21 million acres; and next in importance, because it is practically a Bengal monopoly, is jute, grown on over 2 million acres. The province has over 1,500 factories under the Factories Act of 1911, employing over 450,000 workers; but other industries, though numerous, are insignificant in comparison with jute, which is manufactured in 93 mills (58,000 looms) with a paid-up capital of over £17 millions. During 1937 the industry was affected by two troubles. The earlier one was the failure of the mill-owners to secure agreement for continuing the general curtailment of output which had resulted from the heavy fall in the world's demand for jute fabrics and the consequent collapse in prices. The government refused to intervene, and it was accordingly decided to unseal the looms which had been temporarily out of action, and risk the consequences. Fortunately, this coincided with some improvement in the markets. The second trouble which befell the industry was an outbreak of strikes, with demands by the workers for far larger concessions than the employers were prepared to accept as reasonable. This movement was not uninfluenced by the Communist propaganda of a section of the Congress; but it was tactfully handled by the new government, which is interested in developing a healthy trade-union spirit.

Anarchical crime, with a powerful terrorist organization, had for many years been an anxiety in Bengal. Under the continuous pressure of special measures, it has recently shown less signs of activity; and towards the close of 1937, a number of détenus were released, in the hope that the change in the political situation may wean them from the cult of violence. Many of them were semi-literate unemployed young men, who have, during their period of detention, been taught how to earn a respectable living. (ME.)

BERAR: *see* HYDERABAD.

BERLIN, residence of the Hohenzollern electors, kings, and emperors from 1442 to 1919 and capital of the German Reich since 1871, is also the largest and most important city of Germany. Reorganized in 1920 to include several suburbs, Greater Berlin in 1933 had an area of 332sq.m. and a population of 4,242,501. Aside from its political advantage as the seat of the Prussian and German governments, its commercial importance has been favoured for more than two centuries by its situation on the river Spree, affording cheap water communications through the wide-reaching German system of canals; later it became the centre of the German railway network, and more recently the central point of Germany's widely developed commercial air-services. At its Tempelhof airport, enlarged during the winter of 1937–38 to be the largest in Europe, 102 big aeroplanes arrive and depart every 24 hours. A great stadium and sports field was built in west Berlin for the Olympic Games of 1936, while at the same time a gigantic Reichsbank, a military air-service building, and other large public works were rising to completion in the heart of the city. Two immense railway terminals, one on the northern and the other on the southern outskirts, are planned to supersede the ten existing but inadequate railway stations; a connecting tunnel will enable trains from Rome and the south and west to pass under Berlin and continue to Copenhagen and Warsaw and other points north and east. New automobile highways will converge at Berlin, but will also circle the city, so that through traffic will not congest the capital. Hitler intends to transform the city during the next twenty years by a grandiose reconstruction programme. At the laying of the cornerstone of the faculty of military science, the first building of the new Berlin University, he declared on Nov. 27, 1937: 'It is my unalterable determination to ornament Berlin with those streets, structures, and public squares which will make it through all the ages the worthy capital of the German Reich. The size of these projects will not be measured by the needs of 1937. They will be planned with the knowledge that it is our duty to prepare a city that will stand a thousand years, worthy of the immeasurable future of a nation with a thousand years' history'. For the Berlin of earlier days, *see* the article BERLIN in the *Ency. Brit.* (*See* also HITLER, ADOLF.) (S. B. F.)

BERMUDAS, THE, a group of islands in the Atlantic Ocean, forming a British colony, in 32° 15′ N. and 64° 50′ W., about 580m. E. by S. from Cape Hatteras on the American mainland. Language, English; capital, Hamilton (pop. approx. 3,000), situated on Main Island; St. George, on the island of that name, is the only other town, but in Ireland Island is situated the royal dockyard and naval establishment. The governor is Lieut.-Gen. Sir R. J. T. Hildyard. The area is 19¼sq.m.; population (1931 census) 27,789; (official est., 1936) 30,552, including 59 per cent. negroes. The colony has an appointed governor and a legislature partly appointed by the Crown and partly elected by each of the nine parishes. Owing to the important strategic position of Bermuda, the British Government maintains a garrison there. Suffrage is restricted to male free-holders. In Feb. 1937, the legislature rejected a very limited woman's suffrage. External communication is by government-subsidized ships, but numerous cruise-ships also call there. Test flights for a regular aeroplane service were made in May 1937 and services started late in the year. The backbone of the colony's economy is the tourist trade, largely from the United States and Canada, from which it derives 80 per cent. of its revenue. In 1935–36, it was visited by 82,664 cruise arrivals and tourists, while there entered and cleared during 1935 a total tonnage of 6,707,246. Bermuda has also become, of recent years, a very important centre for marine biological and oceanographical research. Imports, primarily foodstuffs and manufactured articles, in 1936 aggregated £1,891,676, over 50 per cent. from the British Empire (especially Great Britain and Canada), due to Imperial Preference. Dissatisfaction with the results of Imperial Preference was expressed in 1937. Exports in 1936 were £135,812, less than half the 1934 total, with almost 40 per cent. to the British Empire. Only £55,820, chiefly in vegetables, lily bulbs, and flowers, was locally produced. There is a small industry of manufacturing perfume from flowers grown locally. The unfavourable balance of trade is covered by tourist purchases. The monetary unit is the pound sterling. Government receipts in 1936 aggregated £431,399, and expenditures £412,141. Education is compulsory. Schools are private, but with heavy government grants. Total school enrolment in 1936 was 3,736.

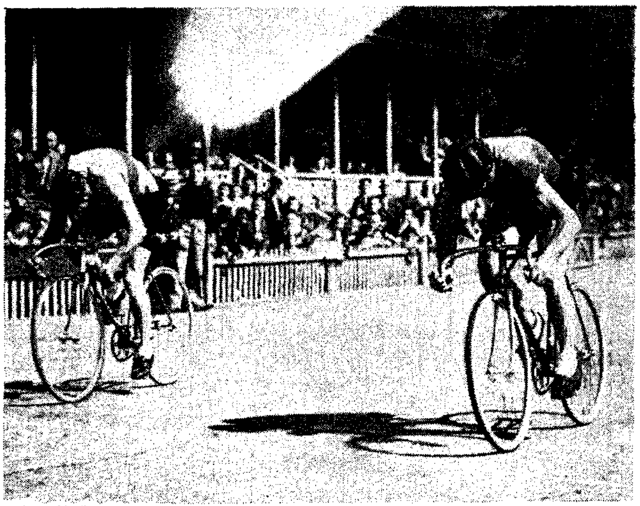
BESSARABIA, the district of Rumania lying between the Pruth and Dniester rivers, and thus between Moldavia and the U.S.S.R. The U.S.S.R. has not yet formally recognized Rumania's sovereignty, but has of recent years accepted it *de facto*. The area is about 44,422sq.km. Population (1930) 3,092,949, of which the largest single element is Rumanian; but there are also Russians, Ukrainians, Poles, Bulgars, Turks, Tatars, Germans, etc., etc. It now forms the 'Regional Directorate of Chişinău', with nine departments. Largest city: Chişinău (Kishinev), with a population of about 115,000; seat of a metropolitan bishopric.

BESSETTE, ALFRED: *see* BROTHER ANDRÉ.

BEVIN, ERNEST (1881–), British trade union official, was born near Bristol. Working in the Bristol docks, he became prominent in the affairs of the Dockers' Union, and one of its local officials. Transferred to its head office after the World War, he leapt into prominence by his advocacy of the dockers' claim for higher wages before the Shaw Commission, and was nicknamed 'The Dockers' K.C.' In 1923 he took the lead in a movement to amalgamate all unions catering for transport workers into the Transport and General Workers Union; he became general secretary, and the union is now the largest in the world, with over 500,000 members. A member of the General Council of the Trades Union Congress since its inception after the War, Bevin was its president in 1937, in which year he settled the 'Coronation Strike' of London busmen by suspending their committee and negotiating terms himself.

BHUTAN. This is a small Himalayan kingdom adjoining India, and under British influence in its external relations, though independent in its domestic administration. Capital, Punakha; area, about 20,000sq.m.; population, about 250,000. Buddhism is the religion, and the Maharaja is Sir Ugyen Wangchuk since 1907.

BICYCLING. Of outstanding importance were the two New York performances of the international six-day races, the first held in the spring and won by the team of Jean Aerts and Omer Debruycker of Belgium, the second staged in the early winter and captured by the German combination of Gustav Kilian and Heinx Vopel. As usual,



Wide World Photos]

ENGLAND V. FRANCE AT HERNE HILL, LONDON, JULY 5, 1937. O. B. HELFS, ENGLAND, WINS FROM CORDÈRE, FRANCE

these sustained grinds, the 62nd and 63rd respectively, attracted the leading pedallers of the world with teams from England, France, Germany, Belgium, and Italy entered. The 31st Tour de France race was won by Roger Lapebie of France, who covered the 2,775-mile circle around that country in 26 days, with 98 of Europe's blue-ribbon cyclists participating. The Belgian riders, who were virtually sure of winning, withdrew from the race at Bordeaux, because, they said, the spectators threw stones and pepper at them. In England, the team of Piet van Kempen of the Netherlands and Henri Buysse of Belgium won the six-day race at Wembley. The Isle of Man bicycle race was captured by J. Fancourt, who covered two laps of the difficult course in 3hrs., 28mins., 43·6secs. for an average speed of nearly 22m.p.h.

In the National Cycling Union championships of Great Britain, the 50-miles record was broken by E. V. Mills in 1hr. 37mins. 34⅖secs. (Mills also set up a new record of 2mins. 1⅕secs. for the mile, standing start, unpaced ; while Albert Marquet did the distance in 41⅖secs. from a flying start and motor paced.) Other championship winners were : 1,000yds., C. W. Horn ; 10 miles, H. Ooms (Netherlands) ; 25 miles, W. W. Maxfield ; 1 mile tandem, J. E. Sibbit and E. H. Chambers ; 2 miles team pursuit, Catford C.C. ; half-mile grass track, N. Schofield ; 5 miles grass track, T. D. Blick.

The national amateur cycling championships of the United States were held at Buffalo, N.Y. The three top honours were won by Charles Bergna, Furman Kugler, and Miss Doris Kopsky, representing New Jersey, sweeping the junior events, the national senior road title, and the women's national championships. Angelo De Bacco, of the Belleville B.C. (Belleville, N.J.), defeated a field of 120 cyclists to win the fifth annual Eastern U.S. road championship over a 50-mile course. The winning time was 2hrs. 12mins. 8·4secs. The American dirt-track title was won by Buster Logan, of Newark, N.J., who subsequently also captured the national quarter-mile championship for amateurs.

BIHAR. A province of British India, including Chota Nagpur, but no longer Orissa, which was constituted a separate province in 1936. Its area now is 69,348sq.m., and its population 31,371,434. The capital and seat of the High Court is Patna (pop. 159,690) ; and other towns of importance are Bhagalpur (pop. 83,847) and Darbhanga (pop. 60,676). Hindus largely predominate, with an admixture of aborigines (mostly Santals) in the forests and hills of Chota Nagpur. The prevailing language is Bihari, allied to Western Hindi. The province contains 16 districts, under a governor (Sir Maurice Hallett since March, 1933). There is a legislative assembly of 152 members, and a legislative council (second chamber) of 30 members. The cabinet (4 ministers) is of the Congress texture, Mr. Shri Krishna Singh being the chief minister. The density of the population is accompanied by a low standard of education ; but there is a provincial university now, and agricultural research of special value radiates from a central institute at Pusa. The staple crop is rice, though much of the finest quality, known as Patna rice, comes from across the border in the United Provinces. Sugar-cane is also extensively grown, and both the cultivation and the manufacture of sugar have received a powerful stimulus from the protection afforded by the heavy duty on the foreign product. The other crops are chiefly maize, wheat, barley, and pulses ; while some of the best brands of Indian tobacco are reviving in popularity, again under tariff protection. The province is fortunate in having two great and kindred industries. The older of the two is coal-mining, the fine seams in the Barakar and Damodar river valleys providing 60 per cent. of the whole output of British India, or about 11 million tons a year. A more recent development is the manufacture of iron and steel in the Tata works at Jamshedpur, which adjoin an enormous surface deposit of iron ore. A disastrous earthquake in Jan. 1934 caused widespread ruin and loss of life ; whole villages were destroyed, railways and bridges swept away, and great stretches of fertile land covered by an outrush of sand from underground. (ME.)

BILBAO, a seaport of northern Spain, capital of the province of Biscay and the largest of the Basque towns (est. pop. at Dec. 31, 1934, 175,900), is situated on the river Nervion, 8m. from its mouth and 148m. N.N.E. of Madrid. Its commercial importance is due to the iron mines in the vicinity, and to its overseas trade.

During the early months of the Spanish Civil War, Bilbao was held by the government, but by April 1937, the insurgents were approaching the city, despite the reinforcements of 'planes received from Barcelona and Madrid on the 8th. On the 23rd and 25th, British food-ships ran the blockade and re-provisioned the city, but on the 28th—after Guernica (*q.v.*)—the Basque government proclaimed the evacuation of all non-combatants. By the end of the month General Franco's forces were within 11m. ; on May 6, 5,000 refugees left for France, escorted by British warships, and on the 20th, 4,000 children left for Southampton. On June 8–9, the town was severely bombed from the air, and on the 12th the outer ring of defences was pierced. Heavy fighting followed ; on the 18th, the suburbs were entered and the government fled ; on the 19th, the old quarter fell to the insurgents, and on the 20th, the city formally surrendered and became the base for insurgent operations against Santander. Figures given by the Valencia defence ministry put the casualties in Bilbao from air bombardment at 253 killed and 146 wounded.

BILLIARDS. No games showed a more marked advance in 1937 than did the games of billiards and snooker. Competitive play in clubs, institutes, and public rooms reached a high-water mark in the history of the games. In addition, billiards and snooker were introduced into thousands more homes by way of the 6ft. by 3ft. tables. It is estimated that over 3 millions of people played games on billiard tables every day in 1937.

The standard of play in the higher branches of competitive billiards and snooker showed a notable advance, particularly among the amateur players. A young Birmingham engineer, Kingsley Kennerley, playing in the final round of the amateur championship of billiards, surpassed the previous best achievement by amateurs in making a break of 549; and Joe Davis, champion of the world at snooker, made a world record run of 135 points in one break at snooker.

Women players also made a notable advance, one of the professional players, Miss Ruth Harrison, a native of County Durham, making a new world record with a break of 197 at billiards.

On the legislative side of the game, The Billiards Association and Control Council, the governing authority for English billiards, snooker, volunteer snooker, pool, pyramids, and russian pool all over the world, introduced minor alterations and additions to the rules, and continued its programme for development of games played on a billiard table.

Overseas tours were undertaken by three of the prominent professional players, Davis visiting South Africa and Horace Lindrum and Melbourne Inman making a round-the-world tour, taking in a flying visit to Lindrum's home in Melbourne, Australia.

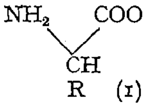
Results of the more important billiards championships and competitions played during the year were as follows: United Kingdom professional championship: Joe Davis 22,601, Tom Newman 18,321. Women's professional championship: Joyce Gardner 2,223, Ruth Harrison 2,204. English amateur championship: K. Kennerley 4,703, J. Thomson 3,633. Women's amateur championship: Mrs. V. McDougall 1,000, Mrs. Morland Smith 991. Scottish amateur championship: J. McGhie 2,636, J. S. Paterson 1,989. Welsh amateur championship: Bryn Gravenor 1,500, Gwyn Howells 1,224. Northern Ireland amateur championship: J. Blackburn. Irish Free State amateur championship: T. O'Brien 1,000, S. Fenning 846. Boys' championship: James Hamilton 400, T. Welch 322. Boys' international: England 4, Scotland 2. Inter-varsity: Oxford 3, Cambridge 0.

The snooker championships and competitions resulted as follows: World's professional championship: Joe Davis 32 games, Horace Lindrum 29. Women's professional championship: Ruth Harrison 9 games, Joyce Gardner 4. English amateur championship: K. Kennerley 6 games, W. H. Dennis 3. Women's amateur championship: Mrs. Morland Smith 3 games, Miss Ella Morris 2. Welsh amateur championship: Gwyn Howells. Northern Ireland amateur championship: J. Chambers. Irish Free State amateur championship: P. J. O'Connor 4 games, J. McIlvenna 1. (W. G. C.)

BINGHAM, ROBERT WORTH, American diplomat; born in Orange County, N.C., Nov. 8, 1871; died in Baltimore, Md., Dec. 18, 1937. His early career was as a lawyer in Louisville, Ky.; he was mayor of Louisville in 1907; but in 1918, he turned to publishing with the purchase of the *Louisville Times*, and *Courier Journal.* He was appointed U.S. Ambassador to the Court of St. James's in 1933. Known in England for his conformity with British customs and for his championship of Anglo-American co-operation, he advocated lower trade barriers and a stabilized currency until forced to resign his position because of the mysterious disease which resulted in his death.

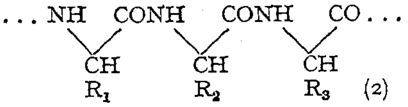
BIOCHEMISTRY. It is convenient to divide biochemistry into three distinguishable though interrelated parts: (1) the isolation and chemical description of those substances of which organisms are made; (2) the description of the processes in which these substances are involved; (3) the description of the manner in which these processes are linked together inside the cell, so that the products or the energy liberated by one action may be efficiently transferred to the next; or the manner in which the energy that is liberated by a chemical action is used for doing external work. The first part has occupied the attention of biochemists and chemists for many years, and is often mistaken for the whole of biochemistry. The second part, the description of processes, is at present the most important and fruitful part of the subject. The third part promises to advance rapidly in the near future; it is this advance that leads us to think that biochemistry will do even more in the future for the clarification of biological thought and the improvement of medical technique than it has done in the past.

Proteins.—The constitution of proteins occupies a peculiarly important position in biochemistry, for the proteins function as structural material, as a food reserve, and as enzymes during the health of an organism, and as antibodies, antigens, and, apparently, viruses during disease. The conception of a protein as a long polypeptide chain, in which amino-acids with the general structure (1) are linked together as in (2)



$$\begin{matrix}\mathrm{NH_2} & & \mathrm{COOH}\\ & \diagdown\;\diagup & \\ & \mathrm{CH} & \\ & \mathrm{R} & \end{matrix}$$

(1)



$$\begin{matrix}\ldots\mathrm{NH} & & \mathrm{CONH} & & \mathrm{CONH} & & \mathrm{CO}\ldots\\ & \diagdown\;\diagup & & \diagdown\;\diagup & & \diagdown\;\diagup & \\ & \mathrm{CH} & & \mathrm{CH} & & \mathrm{CH} & \\ & \mathrm{R_1} & & \mathrm{R_2} & & \mathrm{R_3} & \end{matrix}$$

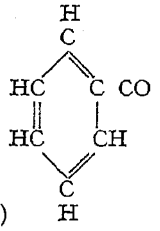
(2)

was due to Fischer and Hofmeister, and for many years there was no more general or explicit picture of protein architecture. Recently several important observations have been made. Svedberg, by measuring the rate at which proteins are sedimented from solution by an intense centrifugal field, has shown that most proteins have molecular weights which are either a simple multiple of 35,000 or the molecular weight is in the millions. Bergmann, having estimated by improved methods the amounts of the different amino-acids in various proteins, has modified this generalization slightly. He suggests that it is the number of amino-acids in a protein molecule and not the weight of the whole protein molecule that shows a regularity, and he proposes formulae governing the number of amino-acids in a protein molecule and the number of times each amino-acid will occur. On this picture Svedberg's weight of 35,000 corresponds to 288 or $2^5 \times 3^2$ amino-acids. From a study of the X-ray diffraction patterns given by a number of fibrous and crystalline proteins, especially insulin, Crowfoot has been able to exclude some hypothetical protein structures. The observed pattern is, however, compatible with the idea that the particle of molecular weight 35,000 is built up from several more or less globular sub-units. Presumably these sub-units consist of peptide chains, for there is still good reason to think that the peptide linkage is the most important in a protein. Other linkages must, however, play some part, for in many proteins more than half of the weight is made up by amino-acids with a reactive group, besides the amino and carboxyl groups involved in the peptide linkage, and not all these extra groups appear to be free.

Much work has been done in recent years on the purification of proteins; this is especially interesting in the case of those proteins which are, or are associated with, enzymes, antibodies, and viruses. Several plant viruses have been obtained in liquid crystalline states, and some enzymes, *e.g.* trypsin, pepsin, urease, and carboxypolypeptidase, have been prepared as crystals with a high enzymic activity. It is very probable that some of these products are in the chemical sense pure, but there is as yet no direct evidence on the point. The study of these preparations and of other highly purified enzyme preparations suggests that true enzyme activity cannot be found in the absence of protein molecules, and these studies have given us no reason to abandon the old hypothesis that part of every enzyme molecule is protein.

Sugars.—Since Haworth's demonstration that the simple sugars generally contain the six-membered pyrane ring, there has been little change in our main conceptions of sugar structure. From the biochemical viewpoint very interesting work is being done on related substances such as desoxy sugars (in Vitamin B_2, some nucleic acids and some pharmacologically active glucosides) and the substances related to Vitamin C. There is also a growing interest in the rôle of complexes containing amino-sugars and uronic acids in immunological reactions. It is now reasonably certain that many of the substances concerned, for example, in blood-group reactions, in the serological specificity of the serum proteins and many bacterial antigens, in the curing of some anaemias and the control of blood-clotting, are of this type. The methylation technique and the methods of X-ray analysis are, in the hands of many workers, throwing valuable light on the constitution of polysaccharides of structural (cellulose, chitin), metabolic (starch, glycogen), or immunological importance.

Oxidative Processes.—During the last few years, largely through the work of Warburg, Keilin, and Green, we have been approaching a relatively clear conception of the mechanisms of several intracellular oxidative processes. The late stage in these processes, at which the fundamental oxidizing agent, atmospheric oxygen, plays a part, is a peculiarly interesting feature of our present picture. Two structures, nicotinic acid amide (3) and dimethyl *iso*alloxazine (4), are of special importance.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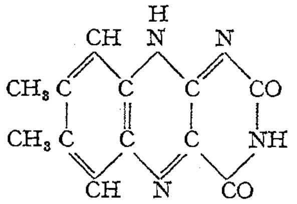
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Two co-enzymes are derived from nicotinic acid amide; these, in the presence of a suitable enzyme and an oxidizable foodstuff, take up hydrogen with the loss of a double bond in the ring. The reduced co-enzymes reduce in turn a carrier derived from dimethyl *iso*alloxazine, and it is this reduced carrier which is oxidized by the dissolved oxygen that has been derived from the atmosphere. As yet, however, only a small part of the whole oxidation process has been explained by mechanisms of this type. It is interesting to note that substances derived from these two structures have other biological functions, *e.g.* they are essential for the growth of certain bacteria, and part of the Vitamin B_2 complex is derived from dimethyl *iso*alloxazine.

Chemistry of Muscular Contraction.—Our knowledge of the chemistry of muscular contraction illustrates the way in which the interlocking reactions of the cell may be unravelled. There is now substantial unanimity that the main problem is not so much how a muscle contracts, but how, having contracted, chemical work is done to make it relax again. The protein micellae in a resting skeletal muscle fibre can, very approximately, be compared with stretched springs held by a catch; they are ready to contract quickly, and then need an elaborate system of chemical actions to supply energy to restore them to the resting state.

It is possible to consider the problem at many levels of complexity; the single twitch, the twitch followed by recovery, the repeated contraction of the muscle in the absence of oxygen, and the normal working of a muscle supplied with both glycogen and oxygen so that the action may go on more or less indefinitely with the conversion of glycogen to carbon dioxide. It would seem that the action that is in most intimate association with the return of the muscle to its resting state is the breakdown of adenylpyrophosphate to adenylic acid and phosphate either free or combined with some other substance such as glycogen. The large group of enzymic reactions which has been so patiently explored by Parnas, Meyerhof, and others is mainly needed for the reconstitution of this adenyl pyrophosphate by the transfer to adenylic acid of phosphate and energy. These actions involve the addition of phosphate to and its removal from hexoses, trioses, three carbon acids, and nitrogen-containing compounds such as creatine, and they have been studied by a very large number of different techniques. The direct or indirect chemical estimation of either the appearance or disappearance of a component of the action is of course the most simple method of following that action, but it has the defect that it cannot be used with very small amounts of material nor when different actions follow one another rapidly. These complex processes may be fruitfully studied on systems which have been partly poisoned by the addition of iodoacetate or fluoride, which affect only a few of the processes and so allow the products of these actions which are unaffected to accumulate, or on systems from which essential co-enzymes or intermediates have been removed, *e.g.* by dialysis. The actual sequence of processes during a twitch is most readily followed by physical methods, and measurements of the heat production, volume, transparency, birefringence, colour, and electrical state of a fibre have thrown much light on the mechanism of contraction.

Biochemistry and Industry.—Since the direction of development in any science is largely conditioned by the sources of money endowing it, the links between biochemistry and industry are to be found in those industries, such as brewing and tanning, which are concerned with the chemical manipulation of biological products. To a great extent the biochemist in industry has been given the unexciting task of standardizing products, and, in some cases, unfortunately, arranging for their more skilful adulteration. Sometimes the probable value to industry of fundamental research has been appreciated, *e.g.* the exhaustive study by Raistrick and his colleagues of the complex substances which moulds, growing under various conditions, can produce from sugar, was carried out for many years in an industrial chemical laboratory. This work is too recent for its commercial significance to be assessed properly, but the analogous processes for the production of citric acid by mould action and the well-known fermentation processes for the production of acetone

Midland Press Agency]

INTERIOR OF TELEPHONE HOUSE, BIRMINGHAM, SHOWING THE HUGE TRUNK SWITCHBOARD. THIS PHOTOGRAPH WAS TAKEN ON A SUNDAY. ON WEEKDAYS OVER 200 OPERATORS ARE AT WORK

and butyl alcohol seem to be very successful. The value of biochemical research is also appreciated by the leather, wool, and wheat-milling industries.

Biochemistry and Medicine.—Apart from the more definite aspects of the relationship between biochemistry and medicine, referred to above, there is the even more important, if subtler, influence which the biochemical attitude towards the living organism as an understandable system has on medical thought. For as long as the activity of a cell was looked on as being due to the almost mystical properties with which 'protoplasm' was endowed, medicine was condemned to the humble rôle of trying to restore the sick to a more or less normal state. The recent development of dietetics has shown us how far removed this 'normal' state may be from that which is attainable, even with existing knowledge. The intimate knowledge which we are now getting of the internal workings of the cell is supplying an explanation of some of the phenomena of pharmocology and embryology, and holds out to medicine new possibilities for the modification and, from some points of view, improvement of the human race. It is reasonable to assume that, if biochemical research on the interrelations between different hormones, on the effects of known substances on the growth and division of cells and on the chemical differences between different mental states, can continue at its present intensity, it will be possible within a few decades to regulate the onset of old age and to modify greatly the physical and mental development of individuals. These powers will, of course, present mankind with a new set of social or moral problems; the manner in which the conflicting interests of the individual and of the community are adjusted will call for new and interesting legislation. It is a fortunate compensation that the parallel advances in the biochemical interpretation of many sexual phenomena will so simplify the processes of contraception and the control of pregnancy that a number of present-day moral questions are likely to become merely academic. During the next century the development of biochemistry and of the related sciences such as genetics will have as profound an influence on man's life as the development of physics and chemistry during last century has had on his environment.

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(N. W. P.)

BIOLOGY: *see* BOTANY and ZOOLOGY.

BIRDS, PROTECTION OF: *see* WILD LIFE, CONSERVATION OF.

BIRMINGHAM: city and bishopric, Warwickshire, England; pop. (est.) 1,018,800; rat. val. £7,092,929; rates (1936–37) 14*s.* 6*d.*, (1937–38) 15*s.*; debt £55,700,000; area 51,147 acres.

The second largest town in England and the sixth in the British Empire, Birmingham, 'The Metropolis of the Midlands', runs its own gas, electricity, and transport undertakings, its baths, museum, art gallery, and school of art, etc., also its municipal bank; its manufactures are multifarious, and include small-arms, bedsteads, jewellery, machinery, tools, bakelite goods, and practically everything connected with railway-stock, cycles, motor-cycles and cars, and wireless sets, as well as chemicals, chocolate, etc.

During 1937 a new telephone building in Newhall Street, costing £600,000 and having the longest switchboard in the world (97ft.) was opened by Mr. Neville Chamberlain. The Duke of Kent visited the hospital centre and the university, where he received the honorary degree of D.Litt. The city's hospitals were greatly assisted by a munificent gift of £146,000 from Lord Nuffield, who desired it to be devoted to the College of Nursing and the Nurses' Home. The Student Christian Movement held its tenth quadrennial congress at the Town Hall, and the Union of Educational Institutions was addressed by Sir William Rothenstein. In August a new Recorder, Mr. H. J. Wallington, was appointed. The bells of the cathedral were recast. A severe epidemic of influenza resulted in a total of deaths among the highest in the whole country. The parliamentary representation of Birmingham—which returns 12 members—received a blow from the death of Sir Austen Chamberlain, the vacancy in his division (Birmingham West) being filled in April by the election of Mr. W. F. Higgs (Nat. Con.), who had a majority of 2,920 over his Labour opponent, Mr. R. H. S. Crossman. During the year—towards the end of which the municipality of Dublin offered the city the equestrian statue of George I, which had stood for many years in the Free State capital, in exchange for some work of art of like value—the city's industries continued to benefit by the trade-boom, the percentage of unemployment being one of the lowest in the country. Industrial disputes were few and unimportant, though the employees at a motor-works staged a new kind of strike—a 'cold-weather strike'—refusing to continue work in unheated buildings.

BIRTH CONTROL. Significant developments in the world-wide birth control movement in 1937 related to its legal and scientific foundations, extension of facilities, and a more rational understanding and acceptance of principles and methods. Increased medical approval and participation were marked.

Bermuda.—Invited by the Department of Health, Mrs. Sanger, president of the American Birth Control League, established birth control centres here.

Canada.—The Ontario Court of Appeals dismissed an appeal from a magistrate's decision in a test case turning on whether an admitted violation of a statute was 'for the public good'—a victory for birth control.

China.—At the request of medical leaders, Mrs. Sanger arranged to visit China, but hostilities with Japan interfered. The Chinese Medical Association approved contraception as a public health activity.

England.—Following representations by a group headed by Lord Horder representing the National Birth Control Association and allied societies, the minister of health increased the power of local maternity and child welfare centres to give birth control advice.

Japan.—Impressive progress is being made in Japan under the leadership of Baroness Ishimoto.

United States.—Birth control under medical direction became legal on Nov. 30, 1936, after a long fight against a Federal law classifying contraceptive information and supplies with obscenity, and the American Medical Association approved birth control as an integral part of medical practice and education during 1937. Legalization stimulated efforts to incorporate birth control into the programmes of public and voluntary health, welfare, child-caring and maternity organizations, medical colleges, hospitals, health centres, and clinics. Forty-nine new centres were opened in 19 States.

In some religious groups objections to birth control continue on grounds advanced as fundamental. Some rest, however, on the assumption of moral implications which ignore scientific facts and human realities. But the trend is steadily towards wider acceptance. (M. Sr.)

BIRTH STATISTICS. Adequate birth statistics are available for about one-third of the population of the earth. In western and northern Europe the yearly number of births increased from 3,427,000 in 1841–45 to 4,599,000 in 1901–05. By 1927 it had fallen below the level of 1841–45; in 1933–36 it amounted to 3,172,000. In central and southern Europe it declined from about 5,445,000 in 1922–23 to about 4,895,000 in 1933–36. For the white population of the British Empire it decreased from about 1,450,000 in 1921–26 to about 1,295,000 in 1927–32, and to about 1,200,000 in 1933–36.

The simplest method of relating births to population is to compute the yearly birth-rate, *i.e.* the rate of live-born per 1,000 inhabitants. The birth-rate in western and northern Europe dropped from 32 in 1841–85 to 24 in 1911–14 and to 16 in 1932–33. Owing to the recent increase in the number of births in Germany, it rose to 17 in 1934–36. It declined in central and southern Europe from 32 in 1922–23 to 25 in 1934–36. It decreased, both for the white population of the British Empire and for the United States, from 22 in 1921–26 to 17 in 1933–36.

BIRTH-RATES, 1881–85 AND 1933–36

Country (Present Territory)	1881–85	1933–36
AUSTRIA	32·9	13·5
BELGIUM	30·9	15·8
BULGARIA	39·4 (*a*)	27·7
CZECHOSLOVAKIA	35·1 (*b*)	18·3
DENMARK	32·4	17·6
ENGLAND AND WALES	33·5	14·7
SCOTLAND	33·3	17·8
NORTHERN IRELAND	24·7 (*c*)	19·6
IRISH FREE STATE	22·9 (*c*)	19·5
FINLAND	35·5	18·0
FRANCE	25·0	15·7
GERMANY	36·8	17·7
HOLLAND	34·8	20·4
HUNGARY	44·4 (*e*)	21·3
ITALY	38·0	23·3
NORWAY	31·0	14·6
POLAND	41·9 (*f*)	26·3
RUMANIA	42·2 (*e*)	31·6
SPAIN	36·4	26·4 (*d*)
SWEDEN	29·4	13·8
SWITZERLAND	28·7	16·0
YUGOSLAVIA	46·8 (*e*)	31·4 (*g*)
AUSTRALIA	35·2	16·7
NEW ZEALAND	36·4	16·5

(*a*) Pre-war territory, 1888–90.
(*b*) 1901–05.
(*c*) 1881–90.
(*d*) 1933–35.
(*e*) Pre-war territory.
(*f*) 1880–81.
(*g*) 1933–34.

The birth-rate shows the proportion by which a population increases through the birth of children; but it is not an adequate measure of fertility, since it is calculated without regard to the sex and age composition of the population. The best method of eliminating the disturbing influence of the sex and age composition is to relate the female births to the females living at the individual years of age. The sum of these specific fertility rates, which is called the gross reproduction-rate, shows the average number of girls born to a woman who lives through the child-bearing age.

Until 50 years ago the gross reproduction-rate exceeded two in every European country except France and Ireland. By 1895 it had dropped below two in England and Sweden. By 1910 it was below two in every country of western and northern Europe, and also in Australia and New Zealand. By 1925 it still exceeded two in Russia, in the Balkan States, in Poland, and it exceeded one in every country of

Europe, as well as in every overseas area predominantly inhabited by whites. By 1935 Russia, apparently, was the only European country in which it exceeded two, and it was below unity in England, Norway, Sweden, Belgium, France, Switzerland, Austria, and Estonia.

Trend of Gross Reproduction-rates, 1880–1935

	About 1880	About 1895	About 1910	About 1925	About 1935
Over 3·2	Russia	Russia	—	—	—
2·8–3·2	—	Poland	Bulgaria Russia	—	—
2·4–2·8	Austria Germany	Austria	Croatia	Russia Japan	—
2·2–2·4	Denmark England Finland Norway	Finland Germany	Hungary	Bulgaria	Japan
2·0–2·2	Sweden	Denmark Norway	Austria	Poland	—
1·8–2·0	—	Baltic Prov. England Sweden	Finland Germany Norway	—	—
1·6–1·8	France	—	Denmark Sweden Australia	Canada Union S. Africa	Bulgaria Greece Portugal
1·4–1·6	—	France	England New Zealand	Czechoslovakia Finland Australia	Italy Lithuania Poland Canada Union S. Africa
1·2–1·4	—	—	France	Denmark Norway United States New Zealand	Holland
1·1–1·2	—	—	—	France Germany Sweden	Finland Hungary
1·0–1·1	—	—	—	England Estonia	Czechoslovakia Denmark Germany Latvia Scotland United States Australia New Zealand
0·9–1·0	—	—	—	—	Estonia France
0·8–0·9	—	—	—	—	England Norway Sweden Switzerland
0·7–0·8	—	—	—	—	Austria

In western and northern Europe as a whole the gross reproduction-rate exceeded two until about 1890. By 1914 it had declined to about 1·5. It dropped below unity in 1931, and has been below unity ever since. In central and southern Europe it still exceeded two in 1922–23. By 1935 it had declined to about 1·5. For the white population of the British Empire it probably exceeded two in nearly every year of the nineteenth century until the middle of the 1890's. In 1933–36 it was approximately one.

(R. R. K.)

BLACK, HUGO LAFAYETTE (1886–), justice of the U.S. Supreme Court, was born at Harlan, Clay county, Ala., Feb. 27, 1886. He received his bachelor of law degree from the University of Alabama in 1906 and practised law until his election to the U.S. Senate in 1927. Re-elected in 1933, he was appointed to his present position by President Roosevelt on Aug. 12, 1937, and was confirmed by the Senate five days later. While the senator was known for his interest in liberal legislation, his selection caused considerable embarrassment to the administration when the *Pittsburgh Post Gazette* revealed that he had once been a member of the Ku Klux Klan and claimed that he had rejoined after having once resigned. On Oct. 1, Justice Black explained in a radio address that he had joined the Klan 15 years previously, had resigned and had never rejoined, not considering an ' unsolicited ' membership card given him in 1926 as membership of any kind. Criticism continued despite this explanation, but suits to prevent him from taking his seat were dismissed by the court and agitation against the appointment gradually subsided.

BLACKSHIRTS. Popular name of the Italian Fascisti, and hence applied to the British Union of Fascists, founded by Sir Oswald Mosley (*q.v.*). On Jan. 1, 1937, the wearing of the Blackshirt uniform became illegal in Great Britain (*see* Uniforms and Processions, Political), and, with its picturesqueness, the organization lost most of its influence. In March, it created some disorder at Bethnal Green on the declaration of the L.C.C. election results, the voting for its six candidates having been negligible; in April, several of its leading members seceded and founded a rival body, the ' National Socialist League '; in June was held a much advertised, and much interrupted, march from Kentish Town to Trafalgar Square, and in October, Sir Oswald and the district Fascist treasurer were injured by stone-throwing while attempting to conduct an open-air meeting at Walton, Liverpool, and taken to hospital.

BLIND, CARE OF : *see* Social Services; Seeing Eye.

BLUM, LÉON (1872–), French Socialist statesman, was born in Paris of well-to-do Alsatian-Jewish stock; he took degrees in philosophy and law, and for some years practised as a lawyer, while engaging in literary work as dramatic critic and author. Under the influence of Jaurès and the Dreyfus affair, he became an active Socialist, and in 1904 was concerned with Jaurès and Briand in the founding of *L'Humanité*, then a Socialist but later a Communist daily. This launched him into politics, but it was not until after the assassination of Jaurès (July 31, 1914) that he became a deputy; from 1919 to 1928, when he was defeated, he represented the Seine, and since 1929 he has sat for Narbonne, becoming in that year president of the parliamentary group of the French Socialist Party, and writing largely in *Le Populaire*. A great force in politics, he resolutely remained in opposition, refusing to accept responsibility without power until, after the triumph of the Front Populaire in

May 1936, he became, on June 4, France's first Socialist prime minister.

During his term of office (*see* FRANCE : *Hist.*), M. Blum had to contend with the situation arising out of widespread strikes, he introduced the 40-hour week, reformed the Banque de France, nationalized the war industries, devalued the franc, actively opposed Fascism in France, and strengthened the defences and the Navy. On May 23, 1937, he announced the government's intention to give women the vote, and on the following day opened the Paris International Exhibition; on June 21 he resigned office, after the Senate had refused to give him authority to attempt to overcome the country's financial difficulties by means of ministerial decrees instead of submitting measures to parliament. In the new Front Populaire cabinet immediately formed by M. Chautemps (*q.v.*), M. Blum became deputy prime minister.

BOHEMIA: *see* CZECHOSLOVAKIA.

BOLIVIA, a South American inland republic on the Southern Andean plateau; capital, La Paz; provisional president, Colonel German Busch. The area, including the Chaco region disputed with Paraguay (approx. 100,000 sq.m.), is estimated to be 514,464sq.m. The population is predominantly Indian, and was estimated at 3,170,784 (1935). The chief cities, with populations, are: La Paz, 142,549; Oruro, 40,000; Cochabamba, 35,574; Potosi, 34,084; Sucre, 33,983; Santa Cruz, 29,802. The official language is Spanish.

History.—Internal developments in 1937 were to a large measure the outgrowth of the economic and social conditions resulting from the Chaco War with Paraguay, and were featured by political instability. During March, President David Toro's programme of State socialism brought him into conflict with the Standard Oil Co. of New Jersey, U.S.A., whose 2,500,000-ac. oil concessions in south-eastern Bolivia were ordered to be confiscated. On July 13, the Toro government was overthrown by a bloodless *coup* which brought 33-year-old Colonel German Busch to power as provisional president. President Busch, adopting a 'middle of the road' policy, abandoned Toro's State socialism, immediately abolished the censorship in effect since the outbreak of the Chaco War, invited civilians into his cabinet, and promised early elections. He refused, however, to restore the Standard Oil concession, organizing a government company to exploit the oil-fields and, by treaty with Argentina, Nov. 19, obtaining the right to export oil, tax free, through Argentina.

Foreign relations in 1937 were chiefly concerned with the unsatisfactory progress of the Chaco negotiations (*see* CHACO). Cordial relations with Chile were furthered by a pact between the two countries to foster mutual trade and cultural relations.

Trade and Communications.—External communication is maintained by a railway to the Chilean port of Arica, over which Bolivia enjoys freedom of transportation, by railway to Argentina, and by regular air service. Bolivia has 1,244m. of railways, and about 1,200m. of good highways. Airlines link the various sections of the country, especially the eastern portion, which is unconnected by highways and railroads. Exports (about 70 per cent. tin) totalled 148,656,100 bolivianos in 1935; imports (chiefly textiles, foodstuffs, and machinery) were 70,893,351 bolivianos, leaving the largest export balance since 1918. As most of the foreign trade comes through neighbouring countries instead of directly, the destination and origin of goods are uncertain.

Natural Resources.—The principal resources are mineral. Bolivia is a principal world tin-producer, but labour shortage, due to loss of man-power in the Chaco War, has seriously curtailed production. Oil-fields of eastern Bolivia are beginning to be exploited. Except in the tropical north-east, high altitude precludes extensive development of agriculture, but the pastoral industry is of some consequence.

Finances and Banking.—The monetary unit is the boliviano (value: approx. five cents U.S.). The budget for 1937 contemplated a balance of revenues and expenditures at 200,067,000 bolivianos. The external debt of Bolivia is in default.

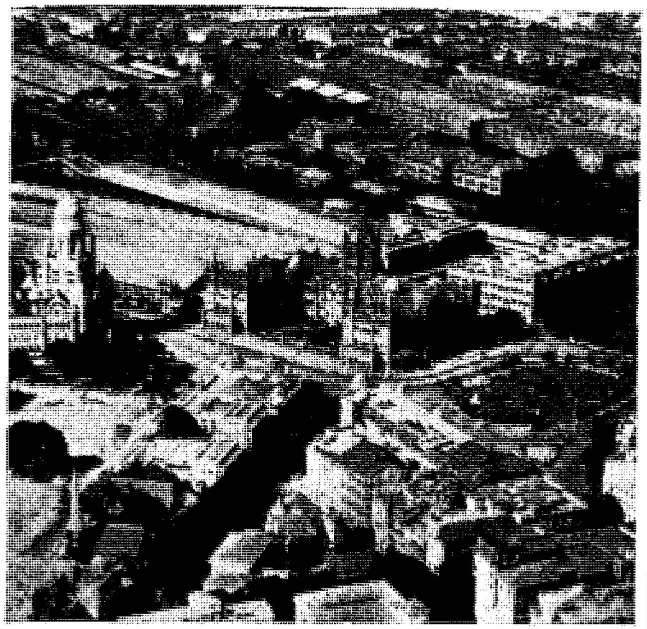
Education.—Education suffered a serious setback from the Chaco War, but plans have been laid for combating the high illiteracy. There are an estimated 1,600 primary and secondary schools and three universities. A military school and aviation school are maintained. The peace-time Army strength is 4,600 officers and men. (L. W. BE.)

L. D. Grimondi, La Paz]

BOLIVIA. TIN-MINING VILLAGE

BOMBAY. A city situated on an island which is joined to the mainland of India by a causeway, and possessing one of the finest landlocked harbours in the east. It has a population of 1,161,383, of whom 68 per cent. are Hindus and 18 per cent. Moslems; it is also the home of the small but influential Parsee community. The municipal corporation has 112 members, and an income from rates and taxes of close on £2 millions. The Port Trust has 22 members, and an income about as large as that of the municipality, with a capital debt of over 20 crores (£15 millions). As on many previous occasions, communal dissension broke out into serious rioting in May–June 1937. In Nov. 1937 there was instituted a regular air-mail service between Bombay and Delhi, to carry passengers and mails, the journey occupying 7½hrs. (ME.)

BOMBAY PRESIDENCY. This Indian province has an area of 77,231sq.m., and a population of 17,992,053. As now constituted, it contains 21 civil districts, under a governor (Sir Roger Lumley since Sept. 1937) and bicameral legislature, from which ministers are drawn. The legislative assembly has a membership of 175, and there are 30 seats in the legislative council. The cabinet at present comprises seven ministers, and is of the Congress persuasion, Mr. Bai Gangadhar Kher being the chief minister. Besides Bombay (*q.v.*), the other chief cities are Ahme-



Planet News]

BOMBAY. AERIAL VIEW SHOWING THE MUNICIPAL BUILDINGS ON LEFT, COVERED PLATFORMS OF VICTORIA STATION CENTRE, AND THE G.P.O. RIGHT

dabad (population 313,789), Poona (233,885), Sholapur (144,654), Surat (98,936), and Hubli (89,982). There are three standard languages: Gujarati in the north, Marathi in the central part of the presidency, and Kanarese in the south. Sind, which was formerly part of the presidency, was partitioned off and raised to the status of a governor's province from April 1, 1936. Separate statistics for the new province and the old are not yet available; but it may be said that Hindus comprise 87 per cent. of the population of the presidency, and that cotton, millets, and pulses are its chief agricultural products. Its dominating industry is the spinning and weaving of cotton, which is carried on at nearly 200 mills in Bombay city and Ahmedabad. Silk fabrics are also manufactured at Surat, Ahmedabad, and elsewhere, being one of the few cottage industries of the finer quality left in India. The standard of education is relatively high, and in this respect, as in several others, the presidency has always been in the van of Indian progress. The political sense too is strong, and is illustrated by the promptitude with which the new government balanced its first budget by drastic economies. Prohibition is being tried out in certain selected areas. (ME.)

BONDS AND GOVERNMENT SECURITIES.

As the world business fabric becomes more closely knit, economic trends in commercial nations, including the trends of security prices, parallel one another more closely, even when ostensible causes seem disassociated. Therefore a joint view of the bond market in England and the United States during 1936 written with special reference to American conditions presents several points of interest.

The end of 1936 saw the end in all probability of the great expansion in demand for long- and medium-term loan-investments, which began in 1932 as a herald or concomitant of industrial revival all over the world. By Nov. 1936, the demand for American bonds had become so insistent that prices in many instances 'topped the all-time peak' of the great bond year 1902, when yields became so small that income considerations seemed hardly the prime motive in investment. Yet by April 1937, the prospect had changed and the decline in values, averaging perhaps 5 per cent. in the United States, was confined to no country and to no type of issue. In the United States, where the great eastern banks carry heavy balances for the rest of the country and under mild duress invest them too heavily in government issues, the fall in the price of 'Government' has been referred to in print as a 'near panic'. To those conversant with the history of bond prices, such a decline was an adequate warning of what might be expected of corporate shares during ensuing months. The American recession in stocks, which had at least a temporary culmination about Oct. 21, was a not unnatural sequence and not wholly unexpected.

One factor in 1937 in the decline in British government securities, which form the counterpart to American bonds, was the rearmament programme which contemplates the expenditure of £1,500 millions during the next five years, of which £400 millions, or an average of £80 millions a year, will presumably be raised by long-term financing. The effect on British gilt-edged prices arises, not only from the greater supply of government securities, which in itself is not an alarming increase in relation to the national income, but also, when viewed from the American angle, from the continuous and cumulative decline in the purchasing power of bond coupons through increased prices of goods and services as the rearmament programme spending occurs. This epoch-making military programme invites enormous economically non-productive activity; it tends to a dislocation of trade balances, to a decline in the ratio of exports to imports, to a loss of foreign markets in basic industries, and therefore to lower security prices.

Although a reaction in bond prices normally precedes a recession in other phases of financial well-being and in business activity, it does not follow that the attainment of a cyclical bond price zenith is inevitably followed by a major cyclical decline in industrial productivity and volume of commerce. Assuming that the bond price peak of a decade is behind us, there are good reasons for believing that the next deep valley is not immediately ahead.

The autumn of 1929 witnessed the end of a business and of a stock cycle. The year 1937 may not mark the end of the recent recovery cycle in business or stocks. The severity of the 1937 decline in common stock prices in New York, comparable in degree with that of the autumn of 1929, may well represent an undue correction of values to meet anticipated business conditions. This decline may also be viewed as being in part an adjustment to declining profit margins and working capital resources—a condition which, because it is not primarily economic but legislative, is subject to more prompt correction as the mistakes in these public policies become more evident.

In general, underlying conditions of to-day are by no means comparable with those of 1929. Economic tides, despite legislative and executive acts, are irresistible and irrevocable. When has there been a major business depression not immediately preceded by scarcity of money and strain on credit? These conditions have long been absent, notably in the United States, where now the largest monetary gold stock on record and exceedingly low rates for all classes of interest prevail. Although production now is generally able to supply current needs, so that forward orders are not so much in evidence as recently, yet in certain basic industries, such as construction, especially in the housing division, post-depression revival has made little headway in supplying the demand for increased facilities to meet population growth.

Subject, therefore, to the imminence or visitation of war, we may look forward with reason, born of experience, to a comparative stabilization of bond prices in the English-speaking nations at prices slightly below their recent peaks for many months to come, pending further changes in the long-term stock and business cycles that may be generally improving. Looking farther ahead, a time-lag of years is not unusual between budget deficits, burdensome debts, and devaluation on the one hand, and real inflation reactions on creditors, including bond owners, on the other. This prospect is a measure of the problems which have to be solved by the financial authorities on both sides of the Atlantic, but while England can rely upon her innate financial acumen, America has behind her her vast natural resources. (L. Ch.)

BOOK COLLECTING. Acquisition by the British Museum of the Ashley library, formed by the late T. J. Wise, was the most momentous event in the world of book collecting during 1937. The price was not announced, but was generally believed to be in the vicinity of £100,000. The acquisition was regarded as the most important since the institution was bequeathed the Thomas Grenville collection in 1846. Inevitably the death of Wise in May, at 77, revived discussion of the spurious pamphlets (notably the Reading 'Sonnets' of Elizabeth Barrett Browning) which had been exposed two years earlier with such devastating thoroughness by John Carter and Graham Pollard. The Ashley library embraces wide areas of post-Elizabethan English literature—largely, but not wholly, poetry, with particular emphasis on the romantic revival and the Victorian era.

From the Yale University Press, under the editorship of W. S. Lewis and A. Dayle Wallace, issued the first two volumes of the collected edition of the letters of Horace Walpole—his correspondence with the Reverend William Cole. This conspectus of 18th-century life as reflected in the alert and urbane communications of one whose interests covered most of its phases is the concretion of years of specialized collecting activity on the part of Mr. Lewis, and is the direct and inevitable outgrowth of his industry and judgment.

Another evidence of the creative potentialities of collecting appeared in the announcement by the Huntington Library, San Marino, Cal., that it will publish a definitive edition of Benjamin Franklin's autobiography from the holograph manuscript in its possession. Completion of the project will signalize the happy ending of the fantastic adventures of a classic. Published first at Paris in French, in 1791, the autobiography was issued in German and Swedish before its appearance, in a garbled version, in English. John Bigelow, while American minister to France during the American Civil War, instituted a search for the original manuscript, which came to light as a result of his activities following his return to the United States. Bigelow then prepared (1868) what had always been accepted as the definitive edition, but comparison of his published text with the manuscript has disclosed numerous errors in transcription, alterations, and unintentional but annoying emendations. These the Huntington edition will repair.

The year was rich in the fruits of bibliographic research. Notable productions in this department include Geoffrey Keynes's monograph on the books of John Evelyn (Cambridge University Press and the Grolier Club), Thomas Franklin Currier's monumental bibliography of John Greenleaf Whittier (Harvard University Press), and the imposing first volume of the catalogue of the tobacco collection formed by George Arents, Jr., compiled by Jerome E. Brooks (Rosenbach, New York).

BOOKS: *see* Publishing.

BOOK SALES. More than ever the year 1937 showed London to be the centre of the rare-book trade. After several lean years, some old libraries of the utmost importance found their way to the auction rooms, as well as many miscellaneous books consigned both by English and Continental owners. The level of prices was generally good, and in many cases new high records were made.

The first important sale of the year was that of Lieut.-Col. W. G. Moss's books in March, which totalled £15,959 11*s*. 0*d*. The highest prices were given for original editions of Blake, *Songs of Innocence and of Experience* fetching £1,400 and Young's *Night Thoughts*, with illustrations coloured by Blake himself, £800. In the same month, the first portion of Lord Aldenham's books was sold for £28,846 15*s*. 0*d*. The collection was rich in manuscripts; two Missals fetched £2,300 and £2,000 respectively. In April, the A. W. Mensing collections from Amsterdam were sold at Sotheby's, the library alone yielding £29,000. Thirty-nine lots of letters from Elizabeth Barrett Browning were sold in June for £2,706, and 60 lines in Keats's autograph for £950. The same month saw the beginning of the dispersal of the great library of the 7th Duke of Newcastle. Thirty-four lots, mainly manuscripts, sold for £38,055. The highest price, £13,500, was paid for the *Hours* of Isabel of Britanny. Audubon's *Birds of America* sold for the record sum of £2,500. On June 21 an imperfect copy of one volume of the Gutenberg Bible realized £8,000. In July, the interesting library of the Earl of Lonsdale was sold. It contained many early atlases and geographical works. Though no sensational prices were paid, the level for this class of book showed a great advance. In the autumn, two more sales of the Duke of Newcastle's books were held, including a large collection of works from the Aldine press and fine bindings. On Dec. 6, the Psalter of Henry IV, belonging to the Earl of Lonsdale, sold for £5,000.

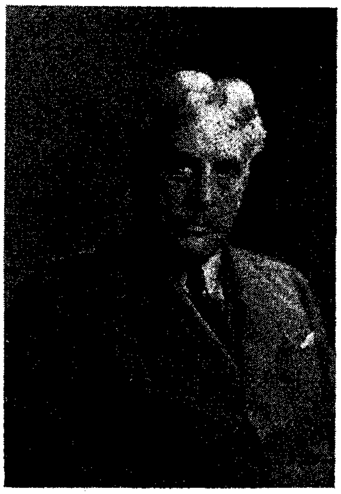
Sales in the U.S.A. showed a slight falling off both in the quantity and the quality of material. Nevertheless, there was a steady flow of books to the auction rooms, and two sales of outstanding interest were held. The first was the library of George Allison Armour, which fetched $85,528.00, and included Keats's copy of Shakespeare in seven vols., which sold for $31,000.00. The second was the Fitz Eugene Dixon collection of sporting and colour-plate books containing the finest collection of Henry Alken's prints and drawings ever made. The series of aquatints of *The Beaufort Hunt* sold for $12,000.00. Rare books of the 19th and 20th centuries continued to maintain their price last year. The first edition of Miss Braddon's *Lady Audley's Secret* was sold for the extraordinary sum of $2,200.00. (J. I. D.)

BOOTLEGGING. In the United States, bootlegging is no less a problem now than during the prohibition era, or in pre-prohibition days. During the five years (1915–19) before national prohibition, an average of 4,000 illicit stills per year was seized. In six months, July 1919–Jan. 1920, the number was 7,000, while in 13 years of prohibition (1921–33) it averaged 10,000 yearly. Illicit still worms and fermenters seized numbered 250,000 in one year. The total appraised value of the property seized varied from $200,000 to $2,000,000 per year, 1915–19, and from $8,000,000 to $30,000,000, 1921–33. The latest figures (1937) give 16,142 stills seized, with over 12,000,000gals. mash and 4,760,521gals. spirits seized, together with other property with appraised value of $3,965,360. Arrests for Federal liquor law violations were 29,477. The U.S. attorney-general reports (1937) 26,784 individual defendants in cases filed, 20,162 of which were defendants in liquor tax cases, and

21,550 convictions. The various State liquor control boards or authorities have also a big bootlegging problem in tax evasion and illicit practices under State and local regulations.

Coal.—Increased governmental regulation creates a bootlegging problem in other industries. In 1937, bootleggers mined and sold illegally 2,400,000 tons of anthracite coal, employing 13,000 men, for which consumers paid $16,000,000. It represented about 5 per cent. of total legal output. The underlying social problems of maladjustment and law enforcement are significant. 'Hot oil' and even 'hot money' are further illustrations of illicit and significant practices that may become as perplexing problems as bootlegging in the liquor industry.

BORDEN, SIR ROBERT (LAIRD), Canadian statesman; born at Grand Pré, Nova Scotia, June 26, 1854; died at Ottawa, June 10, 1937. A biographical note may be found in the *Ency. Brit.*, vol. 3, p. 896. After his resignation in July 1920 from the premiership, Sir Robert continued to be actively interested in the League of Nations, and in Sept. 1930 was chairman of its Sixth Committee of Assembly. From 1927 to 1931 he was president of the Canadian Institute of International Affairs. In 1931 he was elected a vice-president of the National Civil Service Reform League of the United States; and was president of the Canadian Historical Society, 1930–31. In 1889 he married Laura Bond.



Russell, London]

THE LATE SIR ROBERT BORDEN

BORNEO, island of the East Indies, north of the Java Sea, divided from Celebes by the Straits of Macassar; the southern part, about 207,000sq.m. in area, is a Dutch possession; the north and north-east is British, consisting of the State of North Borneo (31,100sq.m.), a British protectorate since 1888, ruled by the British North Borneo Company; Brunei (*q.v.*) and Sarawak (*q.v.*), both under British protection.

The State of North Borneo has a population (1931) of 270,000, mostly Mohammedans and pagans; there are 340 Europeans and some 50,000 Chinese. The capital and largest town is Sandakan (population 13,900); the second town is Jesselton. Jungle and other tropical agricultural products, such as timber, rubber, tobacco, rice, sago, coconuts, etc., are exported. There are about 130m. of railway. Revenue and expenditure in 1935 were £327,500 and £209,000, and the value of exports and imports £952,000 and £594,000 respectively. A State bank is established at Sandakan. The local defence force is an armed native and Indian police numbering about 500, officered by Europeans.

Dutch Borneo, under the governor-general of the Netherlands' Indies at Batavia (Java), is divided for administrative purposes into a Western and a Southern and Eastern District. Its population at the 1930 census was 2,194,500. A concession for timber working has been granted to Japan. For statistics of trade, finance, etc., *see* NETHERLANDS INDIES.

BOSE, SIR JAGADIS CHANDRA, C.S.I., C.I.E., F.R.S., D.Sc., Indian physicist; born at Vikrampur, near Dacca, Nov. 30, 1858; died at Giridih, Bengal, Nov. 24, 1937. He was educated at Calcutta, and Christ's College, Cambridge, after which he returned to Calcutta, and was, in spite of some protest, appointed professor of physical science at the Presidency College. He held this appointment until his retirement in 1915. He was founder and director of the famous Bose Research Institute. Bose was knighted in 1917, having received the C.I.E. in 1903 and the C.S.I. in 1911.

BOSTON, seaport at the head of Massachusetts bay; capital of the State of Massachusetts, U.S.A. Pop. (1930) 781,188 (229,356 being foreign-born whites); (1935 State census) 817,713. Its metropolitan district (U.S. census), including 80 cities and towns, is fifth in population in the United States (1930, 2,307,897); (1935, 2,385,465). A new mayor and city council were elected in November to take office in Jan. 1938.

In 1937, balancing the budget, reducing the tax rate, and relieving traffic congestion were the principal problems. The 1937 tax rate was $38.70 per $1,000 on an assessed valuation of $1,620,265,000, but revenue did not cover current expenses, which were increased by the business recession and by the maintenance of new construction. The net funded debt (August 31) was $130,507,924.95. W.P.A. projects included the completion of a surgical building at the city hospital, a new municipal golf course, and the beginning of a Huntington Avenue subway. The Suffolk County courthouse, under construction in 1937, will overshadow the State Capitol, long the dominant feature of the city. Building permits increased (1936–37) from $11,810,103 to $18,414,997. Appropriations for education totalled $17,239,170. College and university registrations increased, and Boston University and Northeastern University initiated extensive building programmes.

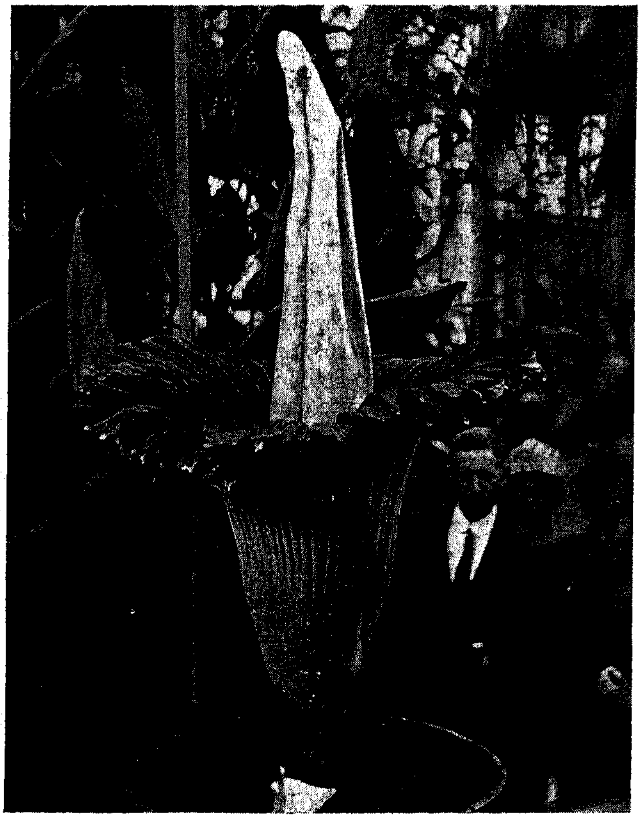
A federation of 100 institutions in the metropolitan district raised a 1937 community fund exceeding $4 millions. The Federal unemployment census (preliminary report) showed 43,234 persons totally unemployed; 20,052 on emergency work; 15,466 partially employed (Nov. 1937).

Total bank resources exceeding $3,000 millions and the Federal Reserve Bank (first district) make Boston the financial centre of New England. The total deposits of all banks (1936) amounted to $1,934,418,000; deposits of the eight largest banks (1937) to £1,074,167,299, a decline of $65,442,402. Boston is the chief United States wool market, and an important fishing port. Wool receipts in 1937 were 321,251,000lb., and in the period Jan.-Nov. 1937 298,348,475lb. of fish were landed. Total commerce of the Port of Boston (1936), 17,214,140 tons; imports, 2,734,507 tons; exports, 312,416 tons.

BOTANICAL GARDENS. Changes of staff at the Royal Botanic Gardens, Kew, London, in 1937, included the appointment of Dr. E. G. S. Brown as temporary assistant in place of Mr. A. R. Horwood, who died in February and had worked on the identification of European and Oriental collections and in arranging the genera of the Compositae and other families. The curator, Mr. Coutts, retired in August, and Mr. Campbell was appointed. Miss Fitch retired after 45 years' service. Mr. Pearce was made assistant curator, controlling the decorative department. Medals commemorating Their Majesties' Coronation were sent to the director, Dr. Sprague, and Sergeant Constable Sealy. The government botanist from Perth, Western Australia, worked at Kew on matters affecting the flora of Western Australia.

Mr. W. Hales, curator of the Chelsea Physic Garden since 1899, died in May, and Mr. Robinson was appointed.

In Canada, the Jardin Botanique de Montréal, established



G. Atkinson]

AMORPHOPHALLUS TITANUM BECC., FLOWERING AT KEW. HEIGHT 5FT. 9IN.

in 1936, was being laid out. The official inauguration is planned for Montreal's third centenary in 1942. In conjunction with Montreal University, an exploration of the valley of the St. Lawrence was carried out, particularly for alpine-arctic plants, to acclimatize them to the botanic garden.

Research at the Botanic Garden and National Herbarium of New South Wales, Sydney, Australia, included work on the Chenopodiaceae and the Eucalyptus. Mr. Audas, of the Melbourne National Herbarium and Botanic Garden, published *Native Trees of Australia.*

Mr. Corner, of the Singapore Botanic Gardens, worked on a book on the common trees of Malaya.

United States.—The director of the New York Botanic Gardens, Dr. M. A. Howe, died, and Dr. H. A. Gleason was made deputy in his place. Mr. Henry Teuscher resigned, to become superintendent of the Montreal Botanic Garden. The largest flower in the world, *Amorphophallus titanum*, native of Sumatra, which has twice bloomed at Kew, flowered in the New York Botanic Gardens in June. The bloom was 12ft. 10ins. in circumference, yellow and green outside, maroon inside, with an overpoweringly offensive odour.

Over $600,000, the Maria Moors Cabot Foundation, was provided by Dr. Cabot for work on increasing the production of cellulose by plant and tree breeding and by improving forest soils. The Arnold Arboretum will share in this work.

Research on modern species of Nicotiana was carried out at the University of California Botanic Gardens, which sent an expedition to the Andes from 1935 to 1937 and also to collect plants on the east coast of South America. At the Blaksley Botanic Garden, Santa Barbara, California, new greenhouses and a laboratory were under construction. The new director is Mr. Maunsell van Rensselaer.

Except for a small nursery, no planting was done on the 386-acre National Arboretum at Washington. The acting director died in January and no successor was appointed.

Europe.—In Belgium, transfer of the botanical garden at Antwerp to the Parc des Rossignols began by the removal of the rosery. At Brussels the government decided to remove the State Botanic Garden to a site six kilometres away.

At the gardens at Bagnères de Bigorre, France, work on virus diseases of the potato was carried out.

Karel Domin took the place of the late Count Silva-Tarouca, founder and director of the dendrological garden at Pruhonice, Czechoslovakia.

Asia.—In memory of Dr. Melchior Treub, director of the Botanic Gardens, Buitenzorg, Java, a Treub fund was established to maintain and extend the scope of the institutions comprising the government botanic gardens in Java, to support research and issue publications. Dr. van Steenis of Buitenzorg made collections in Atjeh, on summits above 3,000ft.

The Chinese Botanic Garden of Sun Yat-Sen's tomb acquired an additional 120 acres, and opened a library, herbarium, and research laboratory. (V. R.)

BOTANY. In the botanical sciences, the year 1937 and those immediately preceding it have been characterized rather by the rapid expansion of activity in some branches than by any spectacular discovery. Systematic and morphological work have gone steadily on, but the bulk of published research has undoubtedly been in the more dynamic parts of the subject, particularly in physiology. In this short survey of the period, therefore, it is proposed to deal with certain of the newer lines of physiological research, and later to indicate the more notable developments in morphology and systematics.

Plant Physiology.—A large amount of the published work deals with research in transpiration, assimilation, and respiration along lines already laid down. It is in the investigation of growth phenomena, however, that the most outstanding results have been achieved. For the past two or three years there has been a constant accumulation of data of the most diverse character bearing upon the subject of growth in its various aspects, particularly in connexion with growth-promoting substances (auxins), photoperiodism, and correlations between different organs of the plant. The discovery of such growth-promoting substances as phenylacetic acid and β-indolyl acetic acid (the ' hetero-auxins ') has been followed by that of many other compounds having similar properties to those of the biologically produced auxin itself, *e.g.* the stimulation of cell multiplication and stretching, and present research is directed towards finding some explanation of the action of these substances upon the plant. Important papers lately published deal with the paradoxical action of auxin itself within the plant. This growth substance is produced at the apex of the stem and in the young leaves surrounding it, and is passed down the shoot, where it inhibits the growth of the lateral buds, yet stimulates that of the internodes and favours cambial activity. It also inhibits growth in the root unless a sufficiency of sugars is present. The several theories as to the action of the hormone, each with its explanation of its apparently selective action, have recently been reviewed. According to the ' direct ' theory, the auxin is said to pass down to the buds and internodes alike, but to act differently upon them, while according to the ' diversion ' theory, certain other substances coming from the roots and cotyledons ' polarize ' the stem so that the auxin travels along it only, and therefore stimulates it alone. The ' indirect ' theory postulates some growth-inhibiting substance travelling upwards, which is overcome by the auxin if sufficient is present. The failure of the auxin to reach and stimulate the buds is referred to the anatomical structure of the stem, which favours the movement of the upward-moving ' inhibitor ' into the buds, but not that of the downward-moving auxin. The aim of present research is therefore to confirm or reject the theory of the ' inhibitor ' substance, and to discover the exact mode of action of the auxin itself.

Photoperiodism.—In problems involving photoperiodism (the effect of long or short periods of daylight upon the flowering of the plant) and particularly those concerned with the change from the vegetative to the reproductive phase of the plant, there is, according to recent American and Russian work, evidence of the activity of growth-promoting substances. For example, by localized illumination of chrysanthemum plants from which the upper leaves have been removed, it has been shown that the onset of flowering is determined by the light-period received by the remaining lower leaves, which seems to indicate that some controlling substance is formed in them which travels up to the growing-point and initiates flowering. Other experiments demonstrating the appearance of flower buds on ' short-day ' species of *Helianthus* grafted on flowering ' day-neutral ' species, and others in which underground tuber formation was induced in *Helianthus tuberosus* by short-day illumination of the apex of the plant, tend to confirm the hormone hypothesis, and raise the questions of the formation, transport, and action of these formative substances.

Another interesting development in photoperiodism is the investigation of after-effect, produced by subjecting plants for a period to short-day conditions and then to long-day ones. The after-effect, which was mentioned in Garner and Allard's original paper, is now well established, pretreatment of only eight or ten days sufficing to alter the course of development of the plant and to affect the onset of flowering.

The ' vernalization ' or changing of a ' short-day ' plant to a ' long-day ' one, or vice versa, with its important economic implications, is another case involving a change in the onset of the reproductive phase of the plant. The original Russian experiments, in which ' summer ' wheat was changed to a short-day type by subjecting partially soaked grain to low temperatures, have been repeated and extended to embrace other species and widely differing conditions of germination, light, and temperature. The results of the different lines of attack cannot yet be harmonized, except perhaps that it would appear that suitable light treatment may replace low temperature in bringing about vernalization. Of the specific action of these factors upon the grain, however, we know little at present.

Plant Nutrition.—During the past year or two there has been an increasing volume of work on the soil nitrogen supply and micro-organisms and their relations to plant nutrition and ' soil sickness '. Among more recent concepts is that of the possibility of beneficial root-excretions, to which the older view ascribed toxic properties and the responsibility for soil-sickness. Lately, a large number of important papers have appeared on the subject. The work of the Finnish physiologists indicates that aspartic acid, β-alanine, and other substances are excreted by leguminous root-nodules, and are reabsorbed by grass crops which are interplanted with them, to the benefit of the latter. Other workers, notably in America, while admitting the validity of this work, have been unable to confirm the results, so that the conditions under which root-excretion of nitrogenous substances takes place will still be uncertain until further work is forthcoming (*see* BACTERIOLOGY).

Ecology.—Although a good deal of descriptive work continues to be published, recent years have seen a great development of the physiological side of ecology, particularly with regard to xerophytes and halophytes. At the same time, an increasing use of statistical method in the analysis of vegetation is being made. On the economic side, research is being carried out upon grass-land, particularly from the aspect of sward improvement of hill pastures.

Fungi.—Research continues upon the nuclear relations of all groups of fungi, while one of the most interesting developments of recent years, upon which work is still actively going on, is the clearing-up of the life-history of the rust fungi (*Puccinia* spp. *et al.*). These rusts, which pass part of their life-cycle on a second host, form upon it two visible bodies, the spermogonia and the aecidia, which produce the aecidiospores, which in their turn reinfect the primary host. It is now known that the spores of the primary host which infect the secondary host are of two strains, ' + ' and ' – '. Either type of spore will produce mycelium and the flask-shaped spermogonia which later extrude a fluid (nectar) containing large numbers of minute cells, known as spermatia, whose function hitherto has not been understood. The important discovery is that before the aecidial stage can form, there must be fusion between cells of the ' + ' and ' – ' strains of the fungus. If one leaf should be infected by spores of both strains, the fertilizing fusion may take place between hyphae within the leaf. It may also, however, be brought about by flies or other crawling insects, which transfer the spermogonial nectar with its spermatia to other infections of the opposite strain, thus enabling fertilization to take place, and aecidia to form. The existence of the different strains means that hybridization of the fungus regularly takes place. We can now therefore follow the whole life-history of some of the rusts, with the exception of certain cytological points which are not yet cleared up, notably the details of the fusion and the rapidity with which the fertilization or 'diploidization ' spreads along the cells of the hyphae. It is upon these lines that present research is proceeding.

In plant pathology, the routine tasks of isolation and control of specific plant diseases goes on, while there is being produced by the chemical manufacturers an ever-widening range of fungicides, particularly for seed-dressings applied against seed-borne diseases. The smut of oats in Scotland, and the snow-mould of rye in Germany have been largely controlled by seed-dressing methods. The elimination of soil-deficiency diseases, such as the rot of beet in Scotland and diseases of citrus fruits in California, has been accomplished by the addition to the soil of the necessary elements, in some cases in minute quantities.

Among other important recent work is that on ' biological antagonism ' in soil, which results in the disappearance of certain fungi from it—a fact which has important implications in the rotation of crops. In fungi, also, there has been discovered a spore-producing substance, analogous to the auxin type of hormone of the higher plants, which influences the onset of sporing in certain fungi.

Algae.—In the green algae new species have been recorded, and the working-out of life-histories is proceeding. In the brown algae, recent work has shed light on the life-history of a number of so-called ' summer annuals ' whose life-cycle has been shown to contain either a microscopic gametophytic phase or a minute discoid body, the *plethysmothallus*, which reproduces for several generations by means of plurilocular sporangia, and ultimately gives rise to the ordinary conspicuous phase. Recently, also, the classification of the brown algae has been under review.

In the red algae, new work has thrown further light on the alternation of generations in the group, and on the cytological side a case of tetraploidy has been recorded.

Other Groups.—In the Bryophytes, apart from systematic work, the question of the conduction of water in the mosses is still at issue, while in the Pteridophyta perhaps the most interesting work is that on the presence of 'vessels' in the wood of certain ferns; the vessel having hitherto been known only in the flowering plants. In palaeobotany, the Kidston collection of fossils is being re-examined, while new species have been recorded from India and the Devonian of Australia. In the Gymnosperms and the Angiosperms no important changes have occurred.

Much of the work referred to in this review appears as yet only in the original publications. The following short bibliography will, however, afford good synopses upon the main subjects.

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BOTHMER, FELIX, Count von, German soldier; born at Munich, Dec. 10, 1852; died in Berlin, March 19, 1937. He entered the Bavarian Army as a lieutenant in 1871. After serving on the general staff of the 2nd Army Corps and with the War Ministry, he became commander of the 2nd Bavarian Division in 1905, and in 1910 attained the rank of general. In the summer of 1916 he led the Southern or Galician Army, which bore the brunt of the Russian offensive conducted by General Brusilov; and in 1918 he commanded the 19th Army in Lorraine with the rank of colonel-general. As president of the Bavarian Royalist Party, he was alleged to have led the monarchist conspiracy at Munich to place the former Crown Prince Ruprecht on the throne.

BOWLS. The ability of English bowls enthusiasts was fully tested during the 1937 season. The extremes of weather conditions—first of all very wet, with a long dry spell later—made adaptability an essential to consistent success.

Nevertheless, the national championships produced play which, in the all-round sense, reached a high standard. The singles contest was won by W. Prentice, of Redcar Zetland B.C., who thus gained his initial success. The pairs event produced a novel result, the victorious couple being A. W. Knowles and his son A. W. Knowles, Jnr., of Worthing B.C.

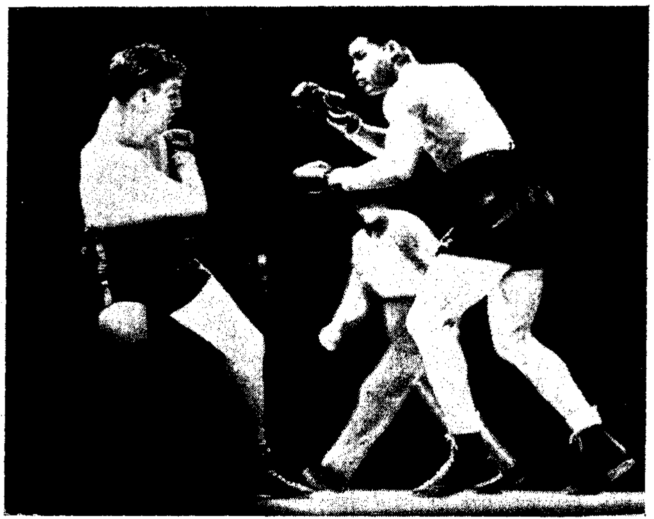
Out of an entry of 2,055 in the rinks contest, the championship went to Sheen Common B.C. For the tenth time Surrey emerged triumphant in the inter-county championship for the Middleton Cup. In the final tie they had a narrow victory over Hampshire, who have now been concerned in the final tie in four of the past five years. The international championship, played in Wales, was won by that country, with England second, Ireland third, and Scotland in the unusual position of 'wooden spoonists'.

Although there have been no changes in the laws of the game during the past twelve months, there is widespread opinion that they are far from ideal, and the near future is likely to see some far-reaching alterations made. A special committee was formed to look into this matter, and to report to the bi-annual meeting of the International Bowling Board.

BOXING. Boxing is now one of the 'cosmical games', and it has been gaining ground, not only throughout Western civilization, but also in Oriental countries. This extension is a phase of that world-wide interest in the European system of athletics, which is itself a part of the general process of Westernization. In the East, however, wrestling is as a rule the traditional man-to-man sport. Japan, for example, has not yet produced a first-rate pugilist, because *sumo* and *jiu-jitsu*, the two varieties of indigenous wrestling, are ancient and highly-honoured arts there, and far more suited to the special Japanese physique than boxing. 'We must increase our stature and speed', a Japanese coach of athletes has said, 'if we are ever to make a show in the modern prize-ring'.

The most remarkable feature of the progress of the ring in 1937 was the increasing popularity of amateur contests. Germany and the Scandinavian countries take the lead here, and both in quantity and quality their amateurs show a marked advance. In a much less degree the same thing has been happening in France and Italy, though boxing for boxing's sake does not appeal to the practical Latin intelligence. In the year under survey, selected teams of British boxers visited foreign countries, and found themselves opposed by skilful exponents, many of whom reached the standard of the A.B.A. championships. Return visits by these friendly enemies invariably resulted in crowd-compelling contests fought out in a sporting spirit. The meeting in London between picked representatives of Great Britain and Germany was particularly exciting. It illustrated the advisability of having a neutral referee in these international affairs, which are very successful, not only from the boxing, but also from the box-office point of view.

Indeed, the team contest is a modern development which may in the end affect the position of professional boxing as a popular entertainment. In the athletic life of English public schools it now plays somewhat the same part as the recent innovation of relay races. In 1937, there was a larger number of these school team matches than in any previous



Wide World Photos]

TOMMY FARR AND JOE LOUIS IN ACTION DURING THEIR CONTEST FOR THE WORLD CHAMPIONSHIP, AUGUST 1937 year. The standard of absolutely amateur boxing, which is seen at its best in the Oxford *v.* Cambridge meeting, is still inferior to that of the A.B.A. championships. The A.B.A. experts, unlike representatives of the universities, concentrate on the one sport, giving all their spare time to a close study of its technique, and their titles are sometimes a stepping-stone to a professional career. Petersen and other successful boxers have proved that a course of amateur boxing is an excellent apprenticeship to the more exacting work of the prize-ring.

Not for many years has Great Britain been as well represented as to-day in the heavier divisions of professional boxing. It is no longer excusable for American critics to jeer at her 'horizontal heavy-weights', since the sudden rise of Farr from obscurity to a high place in the world's championship class has put a stop to such irritating talk. After outpointing Foord in a contest for the British and Empire titles, the young Welshman easily beat Max Baer, a former world's champion, on points, and followed this victory up by demolishing the cast-iron Neusel, Petersen's conqueror, in three rounds. He was then matched with Joe Louis, the negro holder of the world's championship, and, though he lost on points by an unmistakable margin, was never in any danger of being knocked out.

He has a useful left, and can take punishment, but lacks the match-winning punch in the right hand, which is, or ought to be, a characteristic of any world's heavy-weight champion. If he possessed Carpentier's 'poisonous right', it would be odds on his winning the title, which, even in these days of enforced economics, must be worth at least a million dollars to its holder. In point of fact, Schmeling, who won the title from Sharkey on a foul, is an even more formidable candidate for this profitable honour. His heavy right-hand punch has already enabled him to beat Joe Louis, and, though he has done little fighting since then and is now rather too old to improve, there can be no doubt that he retains this priceless asset. But the unpopularity of Nazism in the United States, where Jews are among the prize-fighter's chief patrons, probably will cause Farr to be preferred for a second championship contest with the 'Brown Bomber', as Louis is fantastically styled.

In addition to Farr, there are in Phillips, Harvey, and London three British-born heavy-weights who can give anybody in the world a good fight. Harvey, though he lost his punch at an early stage, is the finest defensive boxer living. Not since 1907, when Gunner Moir was easily beaten by Burns, surely the weakest of the old crop of world's champions, has Great Britain produced a serious challenger for the world title; for not everybody took Phil Scott seriously. This British revival has coincided with an obvious falling-off in the standard of American heavy-weights. Louis himself is certainly not the equal of any member of that famous quartette of American negro boxers, of whom Jack Johnson was *primus inter pares* and Sam Langford little, if at all, inferior. For the moment there seems to be no American heavy-weight of outstanding ability, nor, to come down to the middle-weights, has any successor yet appeared to the incomparable Mickey Walker. Perhaps the shortage of prize-money resulting from the depression, and the lack of showmen of genius such as Tex Rickard, are to some extent responsible for the state of affairs. There is no cyclonic Dempsey in sight, no Tunney who makes the winning of a fight an intellectual feat. However, all the world titles, except the fly-weight, which is possessed by Benny Lynch, Great Britain, are held in America, and three of the title-holders, Louis (heavy), Lewis (light-heavy), and Armstrong (bantam), are negroes. Whether or no the colour line should be drawn in the Ring is still a vexed question in parts of America. (E. B. O.)

BOY SCOUTS. The Boy Scout movement continued in 1937 to develop both in numbers and in the scope and efficiency of its work.

Strength.—In the British Empire the members of the association numbered 1,055,551, an increase over the previous year of 43,615. Throughout the world, the number of Scouts recognized by the International Bureau was 2,855,689, an increase of 262,857 over the figures for 1936.

Activities.—The outstanding event of the year was the Fifth World Jamboree, held at Vogelenzang, Holland, in August, when 28,000 Scouts from 32 different countries lived together in camp for a fortnight interchanging Scout ideas and customs and forming valuable friendships. The Jamboree was opened by the Queen of the Netherlands, and the Chief Scout was present throughout the Jamboree and the international conference which followed it. The British contingent of Scouts, under Lord Somers, numbered 8,164—the largest group of boys ever transported overseas. Many thousands of members of the Dutch public paid for admission to the camp ground and arena, where displays were given daily by the boys.

During the earlier part of the year, the Chief Scout attended an All-India Scout Jamboree at Delhi; and in July, 55 British Scouts visited the National Jamboree of the Boy Scouts of America at Washington.

The Sea Scout branch of the movement acquired a romantic headquarters when the government of the Falkland Islands, through the Colonial Office, handed over to the Boy Scouts Association the Royal Research Ship *Discovery*. Moored in the Thames near the Temple steps, the *Discovery* will be kept as an interesting permanent memorial to Captain Scott and other Antarctic heroes, as well as a permanent headquarters for the Sea Scouts.

The Order of Merit, conferred by King George VI upon the Chief Scout, was a recognition of the Boy Scout movement greatly appreciated by all its workers. Further tribute to its international value came in the form of the award to the Chief Scout of the Wateler Peace Prize by the Carnegie Institute. (E. K. W.)

BRAZIL, a republic in eastern South America and largest country in the western hemisphere; language, Portuguese; capital, Rio de Janeiro; president, Getulio Vargas. Area, 3,291,416sq.m.; pop. (latest census 1920) 30,635,605; (official est. 1936) 42,395,151. The southern part of the country is dominantly white, with a large admixture of Italian and German blood. The northern portion is largely negro, with Indian elements in the Amazon basin. Chief cities (with estimated populations): Rio de Janeiro, 1,756,080; São Paulo, 1,167,862; Recife (Pernambuco), 491,078; São Salvador (Bahia), 369,692; Porto Alegre, 336,504; Belém (Pará), 298,340; Bello Horizonte, 180,241.

History.—Brazil comprises 20 States, one territory, and a Federal district. Until the sweeping changes of Nov. 1937, the States had extensive autonomy, although the Federal Government possessed a frequently exercised right of intervention in State affairs. Developments in 1937 were characterized by political uncertainty, due in part to the presidential campaign preceding the elections scheduled for Jan. 3, 1938, and in part to the country's weak financial condition, and were capped by President Vargas' spectacular assumption of dictatorial powers in November. At the beginning of the year the country was still under a 'state of war' (a modified martial law) following the unsuccessful so-called 'communist revolution' of Nov. 1935. It was generally expected that President Vargas would seek to effect the election of a Vargas supporter to succeed when his constitutional term expired in 1938, and considerable opposition was shown. Flores da Cunha, governor of Vargas' own State of Rio Grande do Sul, and once his principal lieutenant, loomed as a probable opposition candidate, and a new revolution, under his leadership, was freely predicted. He was unable, however, to command nation-wide support, and joined instead in a coalition of anti-Government and non-Fascist groups. In September, President Vargas signed a bill authorizing a 500,000 conto loan to the National Coffee Department to facilitate continued coffee control. This, and a proposal for a central bank fathered by the finance minister, focused attention on the financial weaknesses of the country. While the presidential campaign continued in full swing, on Oct. 1, President Vargas proclaimed a 90-day 'state of war', because of the 'threats of communism'. Two days earlier he informed the 'Getulio National party', which had been recently founded to further his own re-election, that he would not be a candidate, and on the same day terminated a six-months' Federal intervention in the State of Matto Grosso. On Nov. 3, the government took drastic action on the coffee question. The previous coffee-control policy, under which surpluses were burned or otherwise destroyed so as to maintain prices, was abandoned. Declaring that competitor countries had refused to agree on a quota system, and that Brazil refused to be a 'Santa Claus' any longer, the minister of finance announced a new policy of open competition and a reduction of nearly 75 per cent. in the export tax. Immediate Brazilian reaction was generally favourable, but the move spread consternation throughout other coffee-producing countries.

On Nov. 10, President Vargas suddenly, by decree, dissolved both houses of Congress, the State legislatures, and all municipal councils throughout the country, and promulgated a new constitution which would place the entire control of the country under the central government. The scheduled presidential elections were postponed indefinitely. The presidential term was increased to six years. Meanwhile, President Vargas was to continue in office until elections should be held. The new constitution followed that of 1934 in its general economic policies. A unicameral 'Parliament' was substituted for the old bicameral Congress. The Vargas *coup* at the outset was generally interpreted abroad as a definite move towards Fascism, although such an intent was vigorously denied. Foreign fears that debt payments would be indefinitely suspended were alleviated by announcement that any suspension would be temporary, and that nationals of countries with whom Brazil maintained a favourable trade balance (notably the United States) would be given special consideration. Possibly because of the initially unfavourable reaction of United States public opinion, studied efforts were made to emphasize Brazil's desire for friendly Pan-American relations. This was manifested more concretely in a decree-law of Dec. 23, under which foreign exchange, uncontrolled since the November changes, was again put under control.

One problem precipitated by the new order and still unsettled at the close of the year was that of national revenue. Reduction of the coffee export tax from 45 to 12 milreis necessitated eventual substitution of some other form of revenue. Inasmuch as part of the tax went to the States, and as the States were forbidden, under the new constitution, to impose inter-State export taxes, the financial question threatened to become critical for them. A most-favoured-nation trade agreement with Canada was made in June, and in October a treaty with Bolivia was signed. Under this last, a Brazil-Bolivia railway was authorized (*see* below), and an agreement made whereby Brazil would share in any Bolivian surplus of petroleum.

Trade and Communications.—In Sept. 1937, an accord with Bolivia was made providing for construction of a railway from the State of Matto Grosso to Sucre and Cochabamba in Bolivia. In December, an international highway bridge crossing the Uruguay river at Uruguayana, and connecting Brazil and Argentina, was opened. Brazil's 34,300km. of railways were increased by additional construction during 1937. Railways focus on the many ports, where they complement the coastwise shipping lines. Shipping communications, both external and coastwise, were improved during 1937. Internal air communications, too, showed development, the Rio de Janeiro–São Paulo line being so popular that service was doubled in June. There are approximately 17,000m. of good motor roads.

In 1936, imports totalled £49,343,513, 10·7 per cent. more than in 1935, chiefly from Germany, the United States, Argentina, and Great Britain. Foodstuffs, especially wheat; manufactured goods, especially machinery, iron and steel, and automobiles; and raw materials, such as coal and gasoline, constituted the main imports. In the first 10 months of 1937, the total imports increased 30 per cent. Expiration of the trade agreement with Germany was expected to reduce imports from that country in 1938. Exports in 1936 totalled £64,008,664, an increase of 19·3 per cent. over 1935, and went largely to the United States, Germany, and Great Britain. Coffee comprised 50·7 per cent. and cotton 21·1 per cent. In the first 10 months of 1937, exports increased approximately 10 per cent. With the lifting of practically all restriction on coffee exportation and reduction of the export tax, the effects on the coffee trade were uncertain.

Agriculture, Manufacture, and Mining.—Brazil is primarily an agricultural country, although there has been a steady increase in industrialization since 1920. Coffee, the economic mainstay, has been subjected to extensive crop control and consequential economic uncertainty, due to world overproduction. Brazil produces three-fourths of the world's coffee, and is second only to the Gold Coast in world production of cacao. The State of São Paulo is the coffee centre, and its port of Santos the greatest coffee shipping point of the world. Cotton has undergone a phenomenal development, especially as an export commodity, since 1932. Over half the crop is consumed within the country. Other important crops are corn, oranges, sugar cane, beans, and manioc flour. The livestock industry is important, especially in Minas Geraes, Rio Grande do Sul, and Bahia, and accounts for almost 10 per cent. of the exports, in addition to supplying domestic demands. In 1935, there were 94,298,600 head of livestock, principally cattle, in the country. Mineral production is chiefly of gold, iron, and cement. Manganese, although comprising less than 2 per cent. of the mineral production, is important as an export. Manufacturing centres specially in São Paulo. Resources of a forest area in excess of 1,500,000sq.m. are as yet only slightly developed, but already supply important commodities.

Finance.—The monetary unit is the milreis (value: approx. 2½*d.*), ordinarily expressed in contos of 1,000 milreis each for large transactions. The budget for 1938, as fixed by Congress before its dissolution, estimated receipts of 3,666,347 contos and expenditures of 3,579,472 contos.

Education and Religion.—In 1935, there were 36,661 schools with a total enrolment of 2,862,666. There are several universities and technical schools, including the new University of Brazil, created in June 1937 to supersede the University of Rio de Janeiro. The country is predominantly Roman Catholic.

Military service is compulsory. The Navy is second only to that of Argentina among Hispanic-American nations.

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BREAD AND BAKERY PRODUCTS. The most important event of 1937 in the bread and bakery industry in Great Britain was the setting up by the Home Secretary, of the Departmental Committee of Inquiry under the chairmanship of Lord Alness, to consider the question of the abolition of night baking. The committee advised against prohibition, and a representative body of the trade, under the chairmanship of Mr. F. W. Leggett for the ministry of labour, was appointed to consider the desirability of creating machinery for the regulation of hours, wages, and conditions of labour in the trade.

The price of bread, which fluctuates with the published prices of flour, is governed in the London area by the Food Council, on a recognized scale of maximum prices, and this sets a standard in many parts of the country although there are considerable variations. In January, for instance, the price of a 4-lb. loaf was 9*d.*, in April it was 9½*d.*, and in September 8½*d.* and 9*d.*

The following statistics gives some idea of the magnitude of the industry in Great Britain:

Persons employed (1935) bakery products, excluding biscuits	106,093
Value of products	£61,603,000
Cost of materials, fuel, and electricity used	£34,546,000
Persons employed (1935) biscuits and crackers	28,868
Value of products	£15,540,000

(A. E. WI.)

BRERETON, CLOUDESLEY, L. ès L., British educationist and agriculturist; born Nov. 21, 1863; died at Briningham House, Norfolk, July 11, 1937. He was educated at Norwich, Oundle, and St. John's College, Cambridge, and in 1897 obtained an honours degree at the Sorbonne, Paris. From 1898 to 1901 he was secretary of the Royal Society of Painter Etchers; but education became the main subject of his energies, and he was particularly active as a sort of personal link between the educational systems of Great Britain and France, with which country and its language and people he was as familiar as with those of England. One of his main interests, which as a divisional inspector of the L.C.C. he was able to indulge to the full, was the promotion of the teaching of foreign languages. He published many books and articles, both in English and in French, on educational subjects, and edited the education department of the 14th edition of the *Encyclopædia Britannica*. Among his other publications were *Who is Responsible? Armageddon and After*, 1914 (translated into French and Italian); *Modern Language Teaching*, 1930; *Does the Consumer always Pay? The Defence of the National Larder.*

BREWING AND BEER. Predominant among the features of this industry in Great Britain during the year 1937 were the continual centralization of interest in British brewing and the large-scale structural alteration in public-house property. There was also a further advance in the sales of bottled ales as compared with draught, the former now in some areas amounting to nearly 50 per cent. of the total beer.

In Great Britain the duty on beer now stands at 10·32 times the pre-War rates, although it is less than it was in 1931.

Wilson Gould]

THE DRUM INN AT COCKINGTON. ARCHITECT, SIR EDWIN LUTYENS

Brewers regard 1929, the last year in which duty was 80*s.* per standard barrel of 1,055°, as it is now, as a normal year.

JANUARY–OCTOBER: 10 MONTHS

	Standard Barrels	Per cent.
1937	14,802,340	90·78
1936	13,854,448	84·96
1935	13,513,648	82·87
1929	16,306,538	100·0

Comparative statistics, given below, for 1935–37 show that the production of fermented malt liquor in the United States rose during 1937 by 13 per cent. Germany is the leading importer of beer both in gallon and dollar value; the second and third places in gallon value were occupied by Japan and Czechoslovakia, and in dollar value by the United Kingdom and the Irish Free State.

PRODUCTION OF FERMENTED MALT LIQUOR

1935	1936	1937
45,228,605	51,812,062	58,748,087 barrels

1·394 American standard barrel is equivalent to the British barrel of 36 gallons.

Research and World Production.—Additional firms produced canned beer, but since the problem of finding tasteless linings for beer cans has apparently been successfully solved, no notable changes were made in that direction, and, with the exception of a new process of refrigeration, no other important improvements in the traditional brewing processes were introduced. Further progress has, however, been made in bottling methods and machinery, while the number and variety of published papers relating to original work on brewing show a keen realization of the value of scientific research to the industry.

WORLD PRODUCTION OF BEER FOR 1936[1]
(Thousands of American Barrels)

United States of America	56,155
Germany	33,984
Great Britain	23,329
France	12,091
Belgium	11,835
Czechoslovakia	6,444
Russia (estimated)	3,153
Irish Free State	2,568
Australia (1935)	2,463
Sweden	2,169
Canada (1935)	2,118
Total beer production (including all other countries)	175,568

[1] Official figures of the British 'Brewers' Society'.

(J. R-MA.)

BRIDGE : *see* CONTRACT BRIDGE.

BRIDGES. The most notable bridge and the greatest engineering achievement completed in the British Empire during the coronation year of King George VI was the bridge bearing his name, which was built at Bhairab Bazar, over the Meghna, one of the great rivers of eastern Bengal in India, by the Assam-Bengal Railway Company. By replacing a wagon ferry, it provides a more rapid link between the Brahmaputra and Surma valleys of Assam and the important jute-growing area of Mymemsingh and Dacca, thus serving a population of some 7,500,000. About 500,000 of the people of Mymemsingh who have been driven recently through land hunger to migrate to Nowgong in Assam are thus enabled more easily to maintain contact with their former homes. The bridge will also effect a more rapid transfer for both passengers and goods from the Mymemsingh and Dacca districts to the port of Chittagong, the natural outlet for the products of eastern Bengal.

From a constructional point of view, the completion of the bridge within two years of commencing work is an outstanding achievement. It is described as having ' seven midstream spans of 331ft. and 6 approaches of 105ft., supported by masonry piers founded on wells sunk by open dredging through a depth of 60ft. of water and 80ft. below the bed of the river through sand and clay '. All the material, including 3,400 tons of steel-work, was manufactured in India.

One of the major bridge-building works completed in Europe in 1937 was the Storstroem Bridge, which spans the Storstroem channel, in Denmark, and connects the islands of Masnedo and Falster. It was built of British steel and partly by British labour for the Danish State Railways, with two-hinged through arches of steel of 460–590–460ft. in the three central spans, and with steel girder spans in the remainder of the crossing. It carries a single-track railway, a 20-ft. motor road, and an 8-ft. side road for pedestrians and cyclists, and is the longest bridge in Europe. It was opened on Sept. 26 by H.M. King Christian X.

In London, work on the new Waterloo Bridge, spanning the Thames, is still in progress.

In North America some noble bridges were completed ; others are in course of construction. A record span length of 4,200ft. was achieved with the completion of the Golden Gate bridge at San Francisco, a suspension bridge with towers 746ft. high and with parallel wire cables of 36½in. diameter. The Transbay bridge, between San Francisco and Oakland, was completed in 1936.

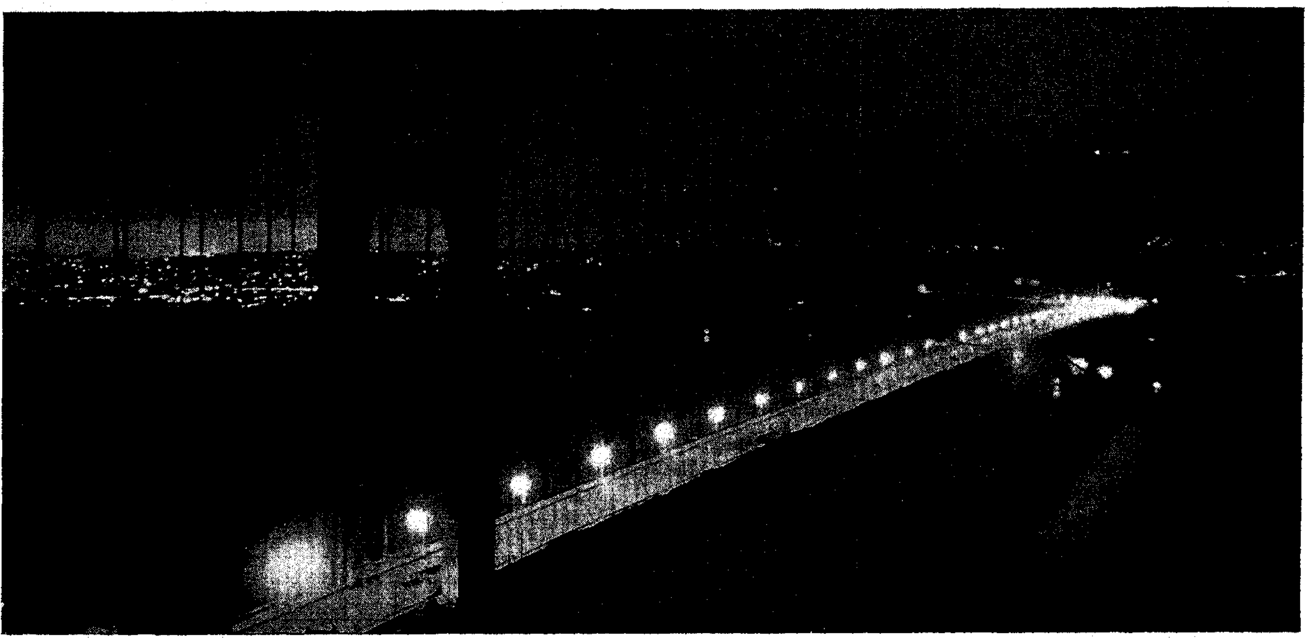
In New York, on the Henry Hudson bridge, carrying Express highway and Parkway traffic over the Harlem river, which was completed in 1936, traffic volume proved so great that the addition of an upper deck to double the traffic capacity was immediately authorized and placed under construction (1937–38). This bridge has a main span of 800ft., making it the longest span and longest hingeless arch in the world. The Marine Parkway bridge over Rockaway inlet at New York was completed in 1937. This has a central vertical lift of 540ft. span, with series of tapering continuous trusses forming the approach.

A notable bridge under construction in 1937, to be completed in time for the 1939 New York World's Fair, is the Whitestone bridge spanning Long Island sound. This is a suspension bridge with a main span of 2,300ft., which will make it the fourth longest span in the world. Plans have been prepared for the proposed Narrows bridge (suspension) to span the entrance to New York harbour with a span length of 4,620ft. A generation ago, the feasibility of a span of 3,000ft. was questioned ; now bridge engineers confidently agree that suspension bridge spans as long as 10,000ft. are practically feasible.

The largest suspension bridge in the British Empire is the First Narrows bridge at Vancouver, B.C., under construction 1936–39. It has a main span of 1,550ft. This is a toll-bridge project, financed with British capital.

An important international crossing is the Thousand Islands bridge, joining the United States and Canada across the St. Lawrence river, under construction 1937–38. This crossing, 7m. long, utilizes the islands to reduce the span lengths required, so that the total cost is only $2,800,000 (£560,000). The American crossing consists of a suspension bridge of 800ft. main span. The Canadian crossing includes a 750ft. suspension span, a continuous truss of two 300ft. spans, and an arch of 348ft. span.

As a modern development, it is significant to note that the cantilever bridge has yielded its previously claimed



Wide World Photos]

THE GOLDEN GATE BRIDGE IN SAN FRANCISCO, COMPLETED IN 1937 supremacy to the suspension type. For spans exceeding 800ft., and even for shorter spans, the suspension type is now generally adopted as preferable. Both aesthetic and economic considerations have governed this change. Moreover, many of the recently or currently constructed bridges are toll bridges, generally publicly owned and operated by bridge commissions or authorities. This has become the prevailing method of financing bridge projects, so that the user pays for them instead of adding them to the general tax burden. This has facilitated the securing of many needed bridge crossings to serve the motoring public where such facilities would otherwise have remained unattainable.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. The annual meeting for 1937 was held in Nottingham (Sept. 1–8), where the fine new buildings of University College made an ideal setting. Over 2,000 members, including 50 foreign guests and other distinguished Dominion and overseas representatives, attended. The presidential address, by Prof. Sir E. B. Poulton, F.R.S., on 'The History of Evolutionary Thought as recorded in Meetings of the British Association', was a notable contribution to modern writing on evolution. In 13 sections meeting simultaneously, some 300 papers were read, and excursions were made to places of interest. Seven popular lectures were delivered in neighbouring towns by well-known members.

Owing to the ever-increasing public demand for systematic presentation of subjects of scientific investigation having a direct bearing on the life of the community, the council recently instituted a series of papers, in which the more immediate public interest would be stressed, and this series has now become well established. At Nottingham, subjects discussed under this head were: X-ray methods and industry, the sex ratio, labour transference, physiology and the health of the individual and the community, adult education, and planning the land of Britain. Individual papers were read on noise and the nation, industrial physics, colour blindness, the informative content of education (by H. G. Wells, president of the education section), design of motor vehicles and traffic safety, State intervention in agriculture.

From time to time the Association has held its annual meeting, by invitation, overseas. Its imperial scope was still further extended when, early in December, 100 members left Britain to attend the Silver Jubilee meeting of the Indian Science Congress Association at Calcutta, and to tour India. Sir James Jeans succeeded the late Lord Rutherford as leader of the delegation and president of the congress.

In Nov. 1936, the British Science Guild was incorporated into the British Association, which now maintains foundation lectures inaugurated by the guild. The Alexander Pedler lecture was delivered on May 3, at Leicester, by Prof. Allan Ferguson, on surface tension, illustrated by motion pictures; and the Norman Lockyer lecture on Nov. 24, in London, by Dr. R. E. M. Wheeler on 'Origins of Town Life in Britain.' Further, in 1937 Mr. G. Radford Mather, an engineer and life member of the British Association, founded a series of lectures bearing his name to deal with science and the community. The first of these lectures was given in London in October by the late Rt. Hon. J. Ramsay MacDonald, and was his last public address.

The Association has long maintained research committees dealing with a wide range of topics; 47 such committees were appointed in 1937, and grants approved by the council to aid the work of some of them amounted to £985. Of reports submitted for 1936–37, one dealt with the position of geology in schools, and made suggestions for increasing the supply of qualified geologists; another with suggestions for the improvement of adult education.

Down House, in Kent, the home of Charles Darwin from 1842 to 1882, is maintained by the Association as a national memorial open to the public. Recent additions have been made to the important collection of Darwiniana, and for the year ending June 6, 1937, there were 6,148 visitors. On July 29, 40 representatives of L'Association française, led by M. Maurain, president, were received there by the council.

The Association has received a grant of armorial bearings from the College of Arms, the blazon being: *Arms:* Azure ten stars, two of six, four of five and four of four points Argent, over all a balance Or. *Motto:* Sed omnia disposuisti.

The president for the Cambridge meeting (Aug. 17–24, 1938) is the Rt. Hon. Lord Rayleigh, F.R.S. (O. J. R. H.)

BRITISH CAMEROONS: *see* CAMEROONS.

BRITISH COLUMBIA, the western Province of the Dominion of Canada, covers an area of 366,255sq.m., being equivalent in area to the United Kingdom, France, Holland, Belgium, and Denmark combined. The population (1937) is approximately 750,000, of whom about 48,750 are Orientals, 25,500 being Japanese and 23,250 Chinese. The Japanese population of British Columbia is about 90 per cent. of the total Japanese in Canada, and is increasing with some rapidity. The Chinese are about 60 per cent. of the total in Canada and, owing to the small number of females, are increasing very slowly. About 50 per cent. of the population is concentrated in the southwestern part of the Province, mainly in the cities of Vancouver, Victoria, and New Westminster.

In the matter of social legislation, the Province takes a lead in Canada and, in addition to protective legislation dealing with workers in industries of various kinds, there has been established a board of industrial relations which regulates wages and hours of work.

The main industries of the Province are forestry, mining, fisheries, and agriculture. Although the Province is still mainly a primary-producing area, certain manufactures have grown up arising out of the primary industries, and also a considerable amount of domestic manufacture. The value of the products of the four main industries in 1936 was forestry, $72 millions; mining, $54 millions; agriculture, $46 millions; fisheries, $16 millions. Manufacturing industries in 1935 amounted to $92,260,804. The Okanagan Valley in the interior of the Province is famous for its apples and other fruits, and the Fraser Valley is noted for dairy and mixed farming.

The representative of the Crown in the Province is the lieutenant-governor, His Honour Eric W. Hamber, who is advised by a cabinet, which is responsible to the legislature, representing the electors of the Province. This cabinet is headed by the premier, Hon. T. D. Pattullo. Annual sessions of the legislature are held. At the recent session important measures were passed making provision for collective bargaining as between workers and employers, and arbitration in the case of industrial disputes. A measure was also introduced making provision for the setting up of a board to control prices of coal and petroleum products in the Province, and for the setting up of a department of trade and industry which shall have as its objective the development of trade and industry in the Province, and the creation of a bureau of economics and statistics which shall be responsible for advising the government on matters of economic importance to the Province. By agreement with the Federal Government, the Province assumed administrative jurisdiction over Yukon Territory.

In provincial politics there are three parties; Conservative, Liberal, and Canadian Commonwealth Federation (Socialist). These have their counterpart in dominion politics, although there is a distinction between the matters which fall within the functions of the two governments. The present government is Liberal. (W. A. C.)

BRITISH EMPIRE. The British Empire is made up of a number of units differing widely from one another in the method of government and the degree of control exercised from Whitehall. It consists of the United Kingdom comprising Great Britain and Northern Ireland; the self-governing dominions, Canada, Australia, New Zealand, the Irish Free State, the Union of South Africa; Burma; India, in which a new constitution with a large measure of self-government is on trial; the crown colonies, in which the measure of control by the Colonial Office varies considerably according to local conditions; the protectorates, mainly backward native areas, in which the tribes are encouraged to develop along their own lines; and the mandated territories, temporarily entrusted to Great Britain or the dominions by the League of Nations according to the Versailles Treaty.

AREAS, POPULATIONS, AND GOVERNMENTS

COUNTRY	AREA Sq. miles (approx.)	POPULATION 000 omitted	CAPITAL	STATUS	GOVERNORS AND PREMIERS
EUROPE					
GREAT BRITAIN AND NORTHERN IRELAND	94,278	44,937	London	kingdom	King: George VI. *Prime Minister* of Great Britain: Rt. Hon. Neville Chamberlain, P.C. Governor of Northern Ireland: The Duke of Abercorn, K.C., K.P. *Prime Minister* of Northern Ireland: Rt. Hon. Viscount Craigavon, D.L.M., M.P.
CHANNEL ISLANDS	75	93	St. Helier St. Peter Port	kingdom of Great Britain and N. Ireland	*Jersey:* Maj.-Gen. Sir H. de C. Martelli, K.B.E. *Guernsey:* Maj.-Gen. Sir E. N. Broadbent, K.B.E.
GIBRALTAR	1,200 acres	21	Gibraltar	colony	Gen. Sir C. Harington, G.C.B.
IRISH FREE STATE (EIRE)	26,600	2,966	Dublin	dominion	President: Eamon de Valera, LL.D.
ISLE OF MAN	227	49	Douglas	kingdom of Great Britain and N. Ireland	Vice-Adm. Hon. W. S. Leveson-Gower, C.B., D.S.O.
MALTA AND GOZO	120	262	Valletta	colony	Gen. Sir C. Bonham Carter, K.C.B.
ASIA					
ADEN, PERIM, ETC.	75	47	Aden	colony	Lt.-Col. Sir B. R. Reilly, K.C.M.G.
ADEN PROTECTORATE	42,000	600		protectorate	
BAHREIN ISLANDS	213	150	Manama	protectorate	Ruler: H.H. Shaikh Sir Hamad bin 'Isa al Khelifah, K.C.I.E., C.S.I.
BORNEO:					
STATE OF NORTH BORNEO	30,000	270	Sandakan	protectorate	C. R. Smith.
BRUNEI	2,280	30	Brunei	protectorate	T. F. Carey, Brit. Res.
SARAWAK	50,000	450	Kuching	protectorate	Rajah: H.H. Sir Charles Vyner Brooke, G.C.M.G.
CEYLON (MALDIVE ISLANDS)	25,500	5,392	Colombo	colony	Sir A. Caldecott, K.C.M.G.
INDIAN EMPIRE	1,575,180	338,171	Delhi	(*in transition*)	Emperor of India: H.I.M. George VI. *Secretary of State:* Marquess of Zetland, G.C.S.I., G.C.I.E. Viceroy and Governor-General: Marquess of Linlithgow, P.C., K.T., G.M.S.I., G.M.I.E., O.B.E.
BURMA	233,492	14,667	Rangoon	overseas territory	Hon. Sir. A. D. Cockrane, K.C.S.I.
THE STRAITS SETTLEMENT	1,531	1,114	Singapore	colony	Sir T. S. W. Thomas, G.C.M.G.
FEDERATED MALAY STATES	27,540	1,961	—	protectorate	The Rulers of Perak, Selangor, Negri Sembilan, and Pahang.
OTHER MALAY STATES	24,728	1,601	—	protectorate	The Rulers of Johore, Kedah, Perlis, Kelantan, and Trengganu.
CYPRUS	3,600	360	Nicosia	colony	Sir H. R. Palmer, K.C.M.G.
HONG KONG	400	1,010	Victoria	colony	Sir G. A. S. Northcote, K.C.M.G.
PALESTINE	10,100	1,400	Jerusalem	mandate	Lt.-Gen. Sir A. G. Wauchope, G.C.M.G., High Commissioner
TRANSJORDAN	34,740	300	Amman	mandate	Ruler: Emir H.H. Abdullah ibn Hussein, G.C.M.G., G.B.E.

Country	Area Sq. miles (approx.)	Population 000 omitted	Capital	Status	Governors and Premiers
AFRICA					
Kenya Colony and Protectorate	225,000	3,100	Nairobi	colony and protectorate	Air Chief-Marshal Sir R. Brooke-Popham, G.C.V.O.
Uganda Protectorate .	94,000	3,573	Entebbe	colony and protectorate	Sir P. Euen Mitchell, K.G.M.G.
Zanzibar . . .	640	138	Zanzibar	colony and protectorate	J. H. Hall, C.M.G. (Brit. Res.).
Mauritius . . .	720	411	Port Louis	colony	Hon. Sir Bede Clifford, K.C.M.G.
Nyasaland . . .	37,000	1,623	Lagos	colony and protectorate	Sir H. Kittermaster, K.C.M.G.
St. Helena and Ascension	81	4	Jamestown	colony	Henry Guy Pilling, C.M.G.
Seychelles . . .	156	30	Victoria	colony	A. F. Grimble, C.M.G.
Somaliland . . .	68,000	345	Berbera	protectorate	Maj. Sir A. S. Lawrence, K.C.M.G.
Basutoland . . .	11,716	663	Maseru	colony	Sir W. H. Clark, G.C.M.G.
Bechuanaland . .	275,000	262	Mafeking, in Cape Province	protectorate	Sir W. H. Clark, G.C.M.G.
Southern Rhodesia .	150,344	1,109	Salisbury	self-governing colony	Sir H. J. Stanley, G.C.M.G.
Northern Rhodesia .	288,400	1,386	Lusaka	colony	Maj. Sir H. W. Young, K.C.M.G.
Swaziland . . .	6,704	156	Mbabane	protectorate	Sir W. H. Clark, G.C.M.G.
Union of South Africa.	472,550	9,589	Seat of Government, Pretoria Seat of legislature, Capetown	dominion	Rt. Hon. Sir P. Duncan, G.C.M.G. *Premier:* Gen. the Hon. J. B. M. Hertzog.
South-West Africa .	317,725	360	Windhoek	mandated territory	Administrator: Dr. D. G. Conradie.
Nigeria, including British Cameroons	372,674	20,000	Lagos	colony and protectorate mandated territory	Sir B. H. Bourdillon, G.C.M.G.
Gambia	4,132	198	Bathurst	colony and protectorate	Sir T. Southorn, K.B.E.
Gold Coast Colony .	23,937	1,781	Accra	colony	Sir A. Hodson, K.C.M.G.
Ashanti . . .	24,379	668	Kumashi	protectorate	Administered under Governor by Chief Commissioners.
Northern Territories	30,486	815	Tamale	protectorate	
Togoland . . .	13,041	349	—	mandated territory	
Sierra Leone and Protectorate	31,900	1,774	Freetown	colony and protectorate	D. J. Jardine, C.M.G., O.B.E.
Anglo-Egyptian Sudan .	1,014,000	5,767	Khartoum	condominium	Lt.-Col. Sir G. S. Symes, K.C.M.G.
Tanganyika Territory .	366,000	5,135	Dar-es-Salaam	mandated territory	Sir H. MacMichael, K.C.M.G.
AMERICA					
Bahamas . . .	4,404	66	Nassau	colony	C. C. F. Dundas, C.M.G.
Barbados . . .	166	188	Bridgetown	colony .	Sir. M. A. Young, K.C.M.G.
Bermudas . . .	19	30	Hamilton	colony	Lt.-Gen. Sir R. J. J. Hildyard, K.C.B.
British Guiana . .	90,000	333	Georgetown	colony	Sir W. E. F. Jackson, K.C.M.G.
British Honduras . .	8,600	56	Belize	colony	Sir A. C. M. Burns, K.C.M.G.
Canada	3,700,000	10,376	Ottawa	dominion	The Lord Tweedsmuir, P.C., G.C.M.G., C.H. *Premier:* Rt. Hon. W. L. Mackenzie King, C.M.G.
Falkland Islands and South Georgia . .	4,618	3	Stanley	colony	Sir H. Henniker-Heaton, C.M.G.
Jamaica	4,450	1,138	Kingston	colony	Sir E. B. Denham, G.C.M.G.
Leeward Islands (Antigua, St. Christopher, Dominica, Montserrat, and the Virgin Islands)	880	139	St. John (on Antigua)	colony	Sir G. J. Lethem, K.C.M.G.
Newfoundland and Labrador	157,740	294	St. John's	colony, constitution suspended	Vice-Adm. Sir H. T. Walwyn, K.C.S.I.
Trinidad and Tobago .	1,980	448	Port of Spain	colony	Sir Arthur A. N. Fletcher, K.C.M.G., C.B.E.
Windward Islands (Grenada, St. Vincent, and St. Lucia)	616	206	St. George's (Grenada)	colony	H. B. Popham, C.M.G.
OCEANIA					
Commonwealth of Australia	3,000,000	6,819	Canberra	dominion	Brig.-Gen. Lord Gowrie, V.C., P.C., G.C.M.G., C.B., D.S.O. *Premier:* Rt. Hon. Joseph Lyons, P.C., C.H.
Fiji	7,000	198	Suva	colony	Sir A. F. Richards, K.C.M.G.
New Zealand . .	103,647	1,587	Wellington	dominion	Viscount Galway, P.C., G.C.M.G. *Premier:* Rt. Hon. M. J. Savage, P.C.
Papua	90,340	276	Port Moresby	part of Commonwealth of Australia	Sir H. Murray, K.C.M.G.
Pacific Islands . .	15,472	160	—	colonial protectorates and condominiums	Sir A. F. Richards, K.C.M.G.
New Guinea, Territory of	93,300	507	Rabaul	mandated territory	Brig.-Gen. W. Ramsay McNicoll, C.B., C.M.G., D.S.O.
Western Samoa . .	1,130	55	Apia	mandated territory	Rt. Hon. M. J. Savage, P.C.
Nauru	5,396 acres	3	—	mandated territory	Commander R. C. Garsia, R.A.N.

BRITISH GUIANA, a British colony in north-eastern South America; capital, Georgetown; governor, Sir Wilfred E. F. Jackson. The area is 90,500sq.m.; population (official est. 1936) 332,898, of which 42 per cent. were East Indians. The chief cities are: Georgetown (66,601) and New Amsterdam (9,514). During 1937, efforts were made to develop the colony, through establishment of a trust fund to provide capital, and stimulation of the Canadian trade. There are 79m. of railway, 322m. of main roads, and several navigable rivers. In 1936, imports (foodstuffs, manufactured goods, and timber) totalled £1,889,638, largely from Great Britain (55 per cent.); exports (sugar and sugar products, bauxite, gold, with some diamonds), aggregating £2,393,225 were largely to Great Britain (41·3 per cent.) and Canada (38 per cent.). The export commodities and rice are the principal products. Production for 1937 was adversely affected by poor weather. Sugar production provides employment directly or indirectly for 50 per cent. of the wage-earners. The monetary unit is the dollar (four shillings). There were 236 primary schools (1936 enrolment, 51,077) and eight secondary schools.

BRITISH HONDURAS, a British colony in northern Central America; capital, Belize (population, 16,687 in 1931); governor, Sir Alan C. Maxwell Burns. Area, 8,598sq.m.; population (est. 1936), 56,071. The colony has direct steamship and air connexions with the outside, 25m. of railroad and 170m. of motor highway. It is important as an intermediary in trade between parts of Yucatan and the United States, with re-exports of £214,050 (1936). Total imports, 1936, aggregated £654,567 from the United States, the United Kingdom, and Mexico; exports totalled £685,020, almost half to the United States. Imports comprise foodstuffs, manufactured articles, and logwood and chicle for re-export. Exports are logwood, chicle, and bananas. The monetary unit is the British Honduras dollar (value, approx. $1.00 U.S.). Total colonial revenue (1936) was $1,597,540.35, with expenditures of $1,388,695.82. Public debt aggregated $1,159,489.50 (1936). Eighty-six primary schools (enrolment of 6,832 in 1936) are financed chiefly by government grants; four private secondary schools (enrolment 336) receive slight government aid. The population is over 50 per cent. Roman Catholic.

BRITISH LEGION. An organization founded by the first Earl Haig in 1921 to foster the interests of British ex-service men; it now numbers about 123,000 members, organized in 4,301 branches, with a women's section comprising 1,689 branches; the membership increased during 1937 by 16,942. In the course of the year, grants amounting to £430,860 were made to distressed comrades, and work was found for 42,700 unemployed ex-service men. The Legion's annual Poppy Day Appeal (Nov. 11), which is its chief source of income, resulted in 1937 in the collection of £546,254, the average since and including 1929 being £495,085. The factory at which the poppies are produced gives employment to about 350 disabled men, for whom also a housing scheme has provided some 150 houses. Total income for 1937 was £671,133.

A village for tuberculous ex-service men is maintained at Preston Hall, near Aylesford, Kent, where wood graining, the manufacture of fancy goods and soap, and other activities are carried on by its population of about 650.

The pensions department administers the Prince of Wales' British Legion Pension Fund, which provides pensions for nearly 2,000 prematurely aged ex-service men and women until they become eligible for the State old-age pension.

Fox Photos]

POPPIES OF VARIOUS SIZES BEING ARRANGED FOR DESPATCH FROM THE RICHMOND FACTORY FOR SALE ON ARMISTICE DAY, NOVEMBER 11, BOTH AT HOME AND IN MANY BRITISH COMMUNITIES ABROAD

The Officers' Association and Benevolent Department has since 1920 expended £2,539,154 in cash relief, placed 8,252 persons in employment, and assisted 4,686 children with the cost of their education, expending on this last-named branch of its work £14,923 in 1937.

BRITISH MUSEUM, THE. Considerable structural alterations took place in 1937. The first quadrant of the old 'Iron Library' to be rebuilt was completed, and a unique system of book delivery installed, with a continuous running system of elevators facilitating delivery to the appropriate floor and a system of horizontal moving bands delivering to the elevator. Air-conditioning was installed for the books, and special lights in the book-stacks were arranged to shade the workers, and throw light on the books only. A system of pneumatic tubes was installed all over the library to deliver tickets for books to the appropriate floors. The North library, closed for three years, reopened when the Reading Room opened after three weeks' closing for cleaning in October. It was made both lower and lighter, new desks and chairs were provided, and shadowless artificial lighting was installed.

Lord Duveen, who has undertaken part of the cost of rebuilding the old 'Iron Library', is also presenting a new Parthenon room to house the Elgin marbles.

On the upper floor, mezzanine floors were built under the Egyptian rooms. An experiment was made with the display of Greek vases. The middle of the room, open to the public, shows a selection of fine specimens, while study series are arranged behind partitions.

The most important accession to the library was the Wise or Ashley library, consisting of 7,000 volumes of first editions of the famous English poets and dramatists, from Elizabethan times up to the present. Volumes of particular interest include: *Welth and Helth*, 1557, of which only one other copy is known; *Gammer Gurton's Needle*, 1575, the earliest English comedy of which any perfect copy exists; and a fine copy of Milton's *Comus*, 1637.

Other library accessions included an English MS. Psalter of about 1360, which proves the English origin of the Egerton Genesis; an autograph MS. of Anatole France, the only autograph outside the Bibliothèque Nationale; nearly 100 original editions of works by Beethoven, Mozart, and Haydn; the Shrewsbury-Talbot archives, 2,195 documents

Fox Photos]

BRITISH MUSEUM: SHOWING THE NEWLY ARRANGED EGYPTIAN ROOM

relating to the estates of the Talbots, Earls of Shrewsbury; four figure drawings by Rodin, and two by Augustus John.

Museum accessions included a pentelic head of Pan of the late fifth century B.C., bronze wine vessels of the same century, and a sixteenth-century Persian dish found near Teheran.

A special exhibition of manuscripts, printed books, prints, drawings, and medals illustrating the history of Coronations in England was open from May 1 to Dec. 31.
(V. R.)

BROADCASTING. Nothing stands still in broadcasting, and this is as amply borne out in the history of European broadcasting during 1937 as in that of earlier years. Rapid growth of the listening public, increasing use of the short-wave band for long-distance transmissions, and the coming of television have hastened developments of all kinds and put fresh problems for the world's broadcasting experts and amateurs to solve.

Great Britain.—British broadcasting entered on a fresh decade of its existence in Jan. 1937 with a new charter and licence granted to the British Broadcasting Corporation after consideration in Parliament of the Ullswater Committee's Report. The new charter expressly charged the B.B.C. with the duty of developing its Empire service and made it responsible for the conduct of the new television service.

The distribution of programmes in various parts of the country was greatly improved in 1937 by the separation of the Welsh and the West of England services, the establishment of a new transmitting station in Anglesey to serve North Wales, and of a new high-power transmitter at Stagshaw for the north-east of England. A review of the year's programmes broadcast through the National and Regional services shows what a wide range of culture and interest exists in Britain, and gives proof of the extent to which broadcasting reflects the events of the day. Foremost among the year's programmes was the broadcast of King George VI's Coronation, it being the first occasion in history when the crowning of a British monarch has been carried beyond the confines of Westminster Abbey into all parts of the kingdom and the Empire. The subsequent royal visits to Scotland, Wales, and Northern Ireland were recorded in the B.B.C.'s programmes, as was the Naval Review at Spithead. Important events in the civic, industrial, and commercial worlds were represented in the programmes. The microphone brought sporting interests into the listener's home with commentaries on the England *v.* New Zealand Test Matches, the draws for the fourth round of the Football Association Cup, the draw for the Davis Cup, and events from other sports and pastimes.

Music continues to be prominent in British broadcasting. As in all fields of its activities as a national institution, but more especially in this, the B.B.C.'s dual position of providing its listeners with suitable programmes, and of acting at the same time as a patron of the arts, becomes more apparent each year. British broadcasting in 1937 maintained on a permanent contract basis more than 400 orchestral musicians in its Symphony Orchestra and its other orchestras in London and the provinces, and gave engagements to thousands of artists. Its contribution to the London concert world included the provision of the summer Promenade Concerts, the B.B.C. Symphony Concerts during the winter season, and the London Music Festival, for which it secured the return to England, after an absence of two years, of Toscanini. The B.B.C. lent its support, financially and by broadcasting, to the leading orchestral and choral societies, both in London and the provinces, and also to the Royal Covent Garden Opera season.

During 1937, dramatic productions in the studios showed a considerable development of 'feature programmes', dealing with such subjects as the history of journalism, the early days of the steamship, Hadrian's Wall, the anti-slavery movement, the Sheffield steel industry, and the Duchy of Cornwall. There was also a marked increase in the number of plays specially written for broadcasting. Light music and variety, both from B.B.C. studios and from cinemas and music halls, figured largely in the programmes, the most notable event in the variety broadcasts being the Royal Command Performance. Talks and discussions covered topics and subjects of every conceivable kind, but paid particular attention to events and movements of the day; in this sphere especially, broadcasting lent its support to the government's health campaign. In addition to the religious services broadcast on Sundays and weekdays, a special series of talks leading up to the Oxford Conference on 'Faith and Order' and the Edinburgh Conference on 'Christian Life and Work' was broadcast. In different fields of radio production, the advantages of the recording processes now available became increasingly apparent. Mobile recording vans with a new method of editing records made it possible to broadcast composite sound records of events only a few minutes after their occurrence. There is no doubt that the development of this new technique will continue to add much to the colourfulness of broadcasting.

The value of the wireless medium as an asset to charitable and social causes can be gauged by the fact that broadcast appeals in 1937 resulted in the subscription by listeners of a total sum of about £150,000 to charitable institutions. Appeals broadcast in the Children's Hour for children's charities brought in further sums totalling more than £3,000. S.O.S. and police messages broadcast from all transmitters during the year reached a total of 1,213. Messages transmitted in connexion with illness were successful in 57 per cent. of cases; police messages calling for witnesses of accidents in 38 per cent., in relation to crime in 23 per cent., and for other special purposes in about 37 per cent.

The increasingly important part that wireless is playing in education is shown by the fact that at the end of 1937 the number of schools in which sets had been installed to receive school broadcasts had increased from the 1936 figure of 5,750 to 7,751. In the field of adult education, the discussion group movement, sponsored by a new Central Committee for Group Listening, continued to grow; for instance, nearly 700 groups followed the special talks on 'Design', or those on 'Clear Thinking', or the series of discussions, 'Men Talking', during the autumn.

In 1937 the B.B.C.'s Empire service completed its fifth year of operation. The daily schedule of transmissions embodied minor modifications, which raised the aggregate hours of transmission to about 18 a day. There was a marked increase in the re-broadcasting of the Empire programmes from local stations and also in their distribution over the live network of wireless exchanges. Another interesting feature of the composition of the Empire programmes was the continual increase of contributions from many different parts of the Dominions and Colonies. Television made some important advances during the year, and at the end of 1937 the London television service still remained as the only public service of television in the world to reach viewers in their homes. (*See* also TELEVISION.)

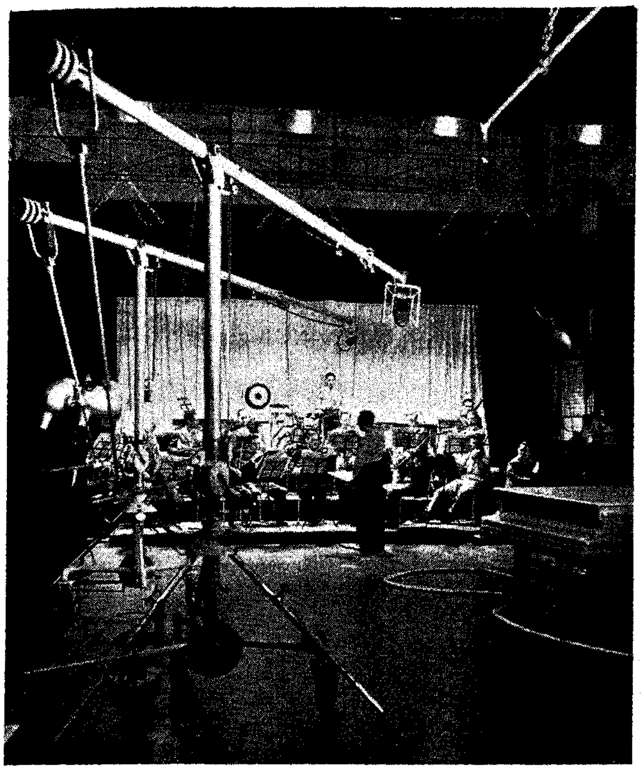
Europe.—In Europe generally, the influence of broadcasting, internationally and socially, is growing steadily. Statistics relating to numbers of listeners show that at the end of 1937 Denmark still led the field, in so far as wireless licences per head of population were concerned, with 704,062 licences (population, 3,706,349). In actual numbers of registered listening sets, the seven leading countries were:

Germany	9,087,454
Great Britain	8,479,500
France	4,163,692
Sweden	1,041,737
Belgium	1,008,169
Poland	861,256
Italy	795,000

The various problems of the congestion of European wavelengths still confronted the broadcasting authorities of all countries during 1937, and it is to be hoped that a successful solution may emerge from the International Telecommunications Conference held in Cairo in Feb. 1938. The Lucerne Plan, drawn up by the European Broadcasting Convention in 1933, has had a large measure of success in the regulation of the medium-wave band through the synchronization of stations; in the long-wave band it has been less successful owing to the number of countries demanding a long wave, and a lack of general acceptance of the Plan because of the reduced separation entailed between stations. Moreover, whereas until recent years there was no congestion of the short wavelengths (a problem not dealt with in the Lucerne Plan), these are now being used to such an extent for broadcasting that the problem of mutual interference is becoming rapidly more serious. In fact, all the principal European broadcasting organizations expanded their short-wave services in 1937 with a view to the extension of foreign language transmissions. The latest country to embark on such a service was Great Britain, which started transmissions in Arabic on Jan. 3, 1938, for listeners in the Near East, and which later will provide transmissions also in Spanish and Portuguese for South and Central American listeners. There was a notable increase of co-operation between the various European broadcasting organizations in regard to the inter-

British Broadcasting Corporation]

STAGSHAW TRANSMITTING STATION OF THE B.B.C.



British Broadcasting Corporation]

A STUDIO AT THE BRITISH BROADCASTING CORPORATION'S TELEVISION STATION AT THE ALEXANDRA PALACE, NORTH LONDON. THE PHOTOGRAPH SHOWS AN ORCHESTRA BEING TRANSMITTED BY THE MARCONI-E.M.I. INSTANTANEOUS TELEVISION CAMERA ON THE RIGHT

change of programmes and commentaries on important events. Among events that thus had almost European-wide broadcasts were : the ' New Year Greeting to all the World ', collected from many European countries and redistributed through Berlin ; Princess Juliana's wedding ; the Coronation ceremony and celebrations ; the King of Denmark's Silver Jubilee ; and the funerals of Signor Marconi and President Masaryk. There was also a considerable interchange of musical programmes. (J.C.W.R.)

United States.—The most important factor in American broadcasting during 1937 was the listening audience. This has continued to expand steadily. To-day there are approximately 24,500,000 radio homes and 4,500,000 automobiles equipped with radios. Personal interviews and mechanical recorders show that the average set is tuned in for 5·1 hours daily, as against 4·3 in 1934. Of course, this figure does not accurately represent total *active* listening time, since the radio is turned on in many homes merely as a steady background of sound while the housewife does her morning work or the tired husband reads his evening paper. This is an important factor to bear in mind when considering the effectiveness of radio as an educational or propaganda medium. Simple material is most easily apprehended aurally while more complicated matter is best understood visually.

The best evidence that radio is still young was the steady rise in profits from broadcasting during the 1937 ' recession '. One of the major networks reported $4 millions profit, which represents a 25 per cent. increase over 1936. Along with increased profits, 1937 also witnessed the widespread unionization of radio actors, announcers, producers, engineers, and musicians. Whereas radio engineers in New York four years ago worked 60 hours a week for $29, to-day, strongly unionized, they work a maximum of 40 hours for $65.

With more than one-half of the total broadcasting time given over to music, the steady trend towards better music was symbolized on Christmas Day by the unforgettable concert of Arturo Toscanini conducting the National Broadcasting Company's Symphony Orchestra. Here was radio music at its finest. The mechanical technique of microphone control combined with exceptional musicianship enabled some 20 million Americans to hear great music better than they could have heard it in the concert hall. Until the N.B.C. Orchestra was organized, the concerts of the New York Philharmonic Orchestra were supreme among symphony broadcasts, but they are now outranked by the studio broadcasts of the special orchestra organized for Toscanini's ten radio concerts.

Musical taste has been further stimulated by the increasingly widespread use of electric recordings of classical music by independent stations. The New York station WQXR, which devotes most of its time to good music programmed in advance, has developed a tremendous following. It began as an experimental station and is now commercially licensed. By training the most simple element of musical enjoyment, recognition, radio is rapidly stimulating the appreciation of good music. Advertising executives are revising their preconceived notion that the general public has no taste for the best music.

The number and popularity of dramatic broadcasts are steadily increasing. According to figures released by the National Broadcasting Company, drama, comedy, and poetical readings comprised 17·7 per cent. of last year's radio hours. This is an increase of 4·1 per cent. over 1936. On the Columbia network there was an even greater emphasis. This chain presented the outstanding dramatic broadcast of the year, the poetical drama, *The Fall of the City*, specially written for radio by the contemporary poet, Archibald MacLeish. A satirical music drama by the modern composer Marc Blitzstein, *I've Got the Tune*, was an outstanding Columbia workshop presentation. The National Broadcasting Company gave a complete George Bernard Shaw play which was revised for radio by the author himself. WQXR presented Ibsen and Wilde plays weekly with the co-operation of the Federal Radio Theatre. Both major networks featured Shakespearean cycles, but showed poor judgment in putting on these first-class performances simultaneously. This was carrying competition to a ridiculous extreme.

The political campaigns utilized radio more than ever before. Effectiveness of radio delivery is to-day an important factor in the life of the politician. When Justice Black of the Supreme Court issued the most important statement of his career, he specifically selected radio to explain his position. The Press has recognized the steadily increasing importance of radio as a news medium by acquiring more and more radio stations.

There is less restrictive radio censorship in the United States than in any other country. Such censorship as there is does not come from the government, but arises either because of commercial commitments or the natural timidity of ' big business '. At the same time experienced radio commentators are free to voice every kind of opinion, and advertisers no longer hesitate to sponsor them.

The problem of combining good radio technique with satisfactory education is being faced more realistically. Although the 1937 National Conference on Radio in Education witnessed the usual conflict between educators and

British Broadcasting Corporation]

BROADCASTING THE CORONATION. THE FOREIGN CONTROL ROOM AT MIDDLESEX GUILDHALL; (CENTRE) PROGRAMME CONTROL POSITIONS; (RIGHT) LINES TERMINATION EQUIPMENT FOR ALL INCOMING AND OUTGOING LINES

broadcasters, the realization that good education can also be good entertainment is gaining ground. An outstanding example is George V. Denny's 'Town Hall of the Air'. This is a debate on current national and international problems by prominent authorities, in which the audience participates with challenging questions from the floor. The always spontaneous and exciting round-table discussion of the University of Chicago professors remains the best adult educational programme on the air. Columbia's 'American School of the Air' is the outstanding daily educational feature. In hundreds of public schools listening to this programme is compulsory, and it is also lively radio entertainment.

In 1937, thirty-eight broadcast licences were held by colleges and universities. Their history has been a long struggle due to inadequate financial support and insufficiently trained personnel. In several Mid-Western States these non-commercial stations are more popular than many of their money-making rivals. Most of them devote half their time to pure entertainment, but win standing and support with well-presented educational programmes. They have a great advantage in their ability to serve the special needs of local areas and to implement broadcasts with printed material, listener groups, or classroom instruction.

The Federal Government has entered the field of radio education with many good programmes sponsored by the Office of Education. 'Let Freedom Ring', which dramatized the history of civil liberties, had the particular merit of presenting the liberal point of view on such issues as child labour and racial intolerance. Another programme, entitled 'Brave New World', related the history of Latin America in dramatic form. There is maintained in Washington a script exchange bureau which has distributed thousands of manuals and suggestions on educational broadcasting techniques.

In the short-wave sphere, the Boston station W1XAL has enabled the whole world to hear Harvard University lectures. The Federal Communications Commission is now considering the advisability of reserving a portion of the short-wave band exclusively for educational purposes. The technical improvements in receiving sets have made it possible for everyone to hear broadcasts from the rest of the world. This has created some concern about the effect of the Communist or Fascist propaganda which Russia, Italy, and Germany are now directing to the United States. American short-wave stations are also devoting more attention to programmes specifically adapted to the needs of foreign listeners.

Television is still 'around the corner' and may stay there for another five years. Before television sets find general sale or acceptance, the obstacles of expense and technical improvements must be met. Radio in the United States makes its money from advertising, and it is questionable whether advertisers think enough of the television medium to spend the vast sums required for television broadcasting. Improvements are being made both in reception and transmission, but much remains to be done. In regular radio broadcasting and reception technical improvements continue. The past year has brought greater transmission efficiency. Short-wave broadcasting from remote pick-ups has been perfected.

Radio has had an eventful year. Progress has been made along its many fronts. New problems have arisen that 1938 will have to solve—development will never lag while the two purposes of American broadcasting, to serve 'public convenience, interest, and necessity' and to make money, move along together. (H. V. K.)

BROTHER ANDRÉ (Alfred Bessette), known as the 'Miracle Man of Montreal'; born Aug. 9, 1845; died Jan. 6, 1937. As a young man he became a novitiate of the Congregation of the Holy Cross, and, in 1871, porter at a boys' school on the slopes of Mount Royal, near Montreal. It was here that he built the chapel which became widely famed as the scene of extraordinary cures performed upon many of the thousands of pilgrims who visited it each day. All these cures, the authenticity of which was certified by qualified doctors, were attributed by Brother André to St. Joseph.

BROWNSHIRTS, the first semi-military organization formed by Hitler and Capt. Röhm from the remnants of secret military groups that continued after the Kaiser's downfall in 1918. Their purpose is to spread the doctrines and promote the power of the Nazi party. They were named from the inexpensive brown shirt, which was the most characteristic part of their uniform. They are generally known in Germany as 'SA', *i.e. Sturm-Abteilungen* or Storm Troops. They probably numbered more than two millions at one time, but were greatly reduced in power and numbers when Röhm was executed in the Blood Purge of June 30, 1934, and are now commanded by Viktor Lutze. Much more important at present are the 'Blackshirts', first organized in 1926 from among Brownshirts who were picked for their physical strength and political reliability. They are known as the 'SS', *i.e. Schutz-Staffeln* or Élite Hitler Protective Guard, now under the command of Heinrich Himmler. *See* GERMANY; NATIONAL SOCIALISM; NAZIS. (S. B. F.)

BRUNEI, small sultanate in N.W. Borneo (*q.v.*), under British protection since 1888, administered since 1906 by a British resident. Area, *c.* 2,500sq.m.; chief town, Brunei (pop. 10,500); population about 34,000, including 60 Europeans. The interior is mainly jungle; timber, oil, natural gas, cutch (mangrove extract), and rubber are produced and exported. There is communication with Labuan by wireless and by regular steamer. Revenue and expenditure in 1935 were £94,900 and £91,700 respectively; imports were valued at £281,800 and exports at £432,800.

BRUSSELS (Fr. *Bruxelles*; Flem. *Brussel*; Ger. *Brüssel*), capital of Belgium, as of Brabant province, on the Senne, 25 miles from Antwerp (ship-canal connexion and large docks), 165 from Paris, and 200 from London. Area (1921 delimitation): 12·7sq.m.; population (1936): 1,258,191—city, 195,268. The most central of the 15 communes of Greater Brussels are: Schaerbeek (123,612), St. Josse-ten-Noode (30,001), Etterbeek (47,846), Ixelles (86,306), St. Gilles (63,140), Anderlecht (87,145), Molenbeek-St. Jean (65,551), Koekelberg (14,521). There are three main railway stations, an airport (Haeren, 4 miles N.N.E.), and broadcasting station. Brussels, more administrative and cultural than commercial, has many wealthy residents. The final conference of Oslo Powers (*see* NORWAY) ended April 17; that on Far-Eastern hostilities (Nov. 3–24) remained inconclusive. Royal visitors included Kings Gustaf of Sweden (February; State) and Carol of Rumania (July; private). At Zellick military aerodrome (May) fire destroyed Professor Piccard's stratosphere balloon. (H. Fw.)

BRUSSELS CONFERENCE: *see* NINE-POWER CONFERENCE.

BUDAPEST, the capital and largest city of Hungary. Pop. (1936) 1,051,804; including Greater Budapest, nearly 1,500,000. Budapest, and in particular its western half, Buda, has grown rapidly of recent years. Its watering-places, and its attractions as a tourist centre, have developed greatly. Its municipal autonomy was slightly curtailed in 1935, but remains extensive. A large programme of temporary housing is planned for the forthcoming Eucharistic Congress.

BUDDHISM. During 1937, Buddhist missions continued their work in Great Britain, the United States, and continental Europe, and in India some progress was made with the construction of a temple at New Delhi, the foundation-stone of which was laid in 1936. The annual commemoration of the Buddha's Enlightenment ('Wesak') was celebrated in London at a meeting presided over by Dr. Ba Maw, Burmese chief minister, and at the end of May a Buddhist opera, *Prince Siddartha*, by Count Axel Wachtmeister, was performed several times at the New Scala Theatre. From June 16 to 18 a Second International Buddhist Congress took place in Paris, under the presidency of M. Masson-Oursel, of the École des Hautes Études, attended by representatives from China, Japan, and Cambodia. It was announced during the year that a Buddhist temple is to be constructed at Los Angeles, Cal. Search for the new Incarnation of the Dalai Lama, the spiritual head of Tibetan Buddhism, who died in 1934, was continued, but certain success has not yet been reported. On Nov. 30, the Tashi Lama (*see* TIBET) died in exile in Western China. *See* Christmas Humphreys, *The Development of Buddhism in England* (1937); *A Buddhist Bibliography* (Buddhist Lodge, London, 1937).

BUDGET. The budgets of Great Britain and the United States are analysed below.

Great Britain.—The national accounts for the year ended March 31, 1937, showed a deficit of £5,597,000 in place of an estimated surplus of £484,000. Income-tax, sur-tax, and estate and inheritance duties had failed by an aggregate of £5,733,000 to reach expectations. This was offset by excess yields of £2,140,000 in stamp duties and of £3,757,000 on customs, but the total shortfall of revenue was a little over a million pounds. On the expenditure side, the defence services cost £7,821,000 more than had been estimated, although the budget had provided £20 millions for supplementary defence votes. There, was, however, a saving of £3,143,000 on the civil votes (including supplementaries), and the fixed debt charge yielded £13,127,000 for the redemption of debt. (Under the fixed debt charge, any saving on interest and management of the national debt was automatically transferred to sinking fund.) Hence, although expenditure totalled £830,313,000, excluding the self-balancing post office account, against revenue of only £824,716,000, there was a true net surplus of £7,530,000.

Mr. Neville Chamberlain, opening his budget on April 20, estimated ordinary revenue for 1937–38, on the existing basis of taxation, at £847,950,000, an increase of £23,234,000 over receipts in the previous year. He expected to obtain £22,223,000 more from income-tax and sur-tax, £1,010,000 more from estate duties, and £12,218,000 more from customs and excise, but there would be a drop of £13,600,000 in miscellaneous (non-tax) receipts. The fixed debt charge was kept at £224 millions. The civil votes (including £10 millions provided for eventual supplementary votes) showed an increase of £20,046,000 over issues in 1936-37, the defence votes an increase of £12,196,000. In addition, expenditure totalling £80 millions would be met by a special defence loan. Mr. Chamberlain had already taken power to borrow £400 millions for rearmament over five years, and a loan of £100 millions was issued a week after the budget. The total increase of expenditure was placed at

£32,535,000, and a prospective deficit of £14,898,000 had therefore to be made good.

Minor adjustments of taxation included measures to restrict legal evasion of income-tax, changes in customs duties to implement the Anglo-Canadian trade agreement, and the abolition of the male servants licence duty. The major source of additional revenue in 1937–38 would be the increase of the standard rate of income-tax from 4*s.* 9*d.* to 5*s.* in the pound. This would yield £13 millions in the current year and £15 millions in a full year. The chancellor finally announced the imposition of a new tax on the growth of company profits, to be known as the National Defence Contribution (*q.v.*). This would yield only £2 millions in 1937–38. The budget was therefore balanced, with revenue estimated at £863,100,000 and expenditure at £862,800,000, excluding the self-balancing post office account and the borrowing for defence.

British Budget
(000's omitted)

Expenditure	Estimate 1936–37	Actual 1936–37	Estimate 1937–38
	£	£	£
Interest and Management of Debt . . .	224,000	210,873	224,000
New Sinking Fund .	—	13,127	—
Other Consolidated Fund Services . . .	11,300	11,656	11,500
Defence Votes * . .	178,251	186,072	198,268
Civil and Revenue Votes †	384,346	381,158	429,080 ‡
Total .	797,897	802,886	862,848 ‡
Self-balancing Expenditure and Revenue			
Post Office . .	69,344	71,880	75,198 ‡
Road Fund . .	26,500	27,427	‡
Revenue			
Income-tax . . .	259,000	257,237	288,150
Sur-tax . . .	56,500	53,540	58,000
Estate, etc., Duties .	89,000	87,990	89,000
Stamps and other Inland Revenue . . .	28,500	30,870	30,500
National Defence Contribution . . .	—	—	2,000
Customs . . .	207,525	211,282	219,850
Excise	110,000	109,500	113,150
Motor Vehicle Duty .	5,000	5,300	34,000 ‡
Post Office (net) . .	11,256	11,170	11,800
Other Non-tax Revenue	31,600	30,500	16,650
Totals .	798,381	797,389	863,100

* Including margin of £20 millions for supplementary votes in 1936–37 estimates; excluding sums to be raised by loan in 1937–38.

† Including margins for supplementary estimates: 1936–37, £5,600,000; 1937–38, £10 millions.

‡ Up to 1937 the motor vehicle duty was divided between the Exchequer share and the self-balancing Road Fund account; for 1937–38 the whole revenue and corresponding expenditure were brought into the ordinary budget. *Per contra*, broadcasting revenue and expenditure (amounting to £2,870,000) were transferred to the self-balancing post office account. (H. V. H.)

The United States.—The 1938 appropriations for governmental departments and agencies are as follows:

Legislative Establishment . . .	$24,325,691.78
Executive Office and Independent Establishments:	
Executive Office	$511,478.00
Civilian Conservation Corps . .	350,000,000.00
Civil Service Commission . .	75,502,000.00
Railroad Retirement Board . .	144,310,077.00
Social Security Board . . .	$258,740,678.00
Veterans' Administration . .	585,832,000.00
Other Independent Establishments .	119,693,960.00
Total, Executive Office and Independent Establishments . .	$1,534,590,193.00
Departments:	
Department of Agriculture:	
Agriculture proper . . .	$129,564,873.00
Agricultural Adjustment Administration	609,144,150.00
Farm Tenancy Act . . .	20,000,000.00
Public Highways . . .	180,000,000.00
Total, Department of Agriculture	$938,709,023.00
Department of Commerce . .	43,388,342.00
Department of the Interior . .	146,646,287.85
Department of Justice . . .	41,012,765.00
Department of Labor . . .	23,681,920.00
Navy Department	526,543,308.00
Post Office Department . .	784,748,053.00
Department of State . . .	19,340,713.34
Treasury Department:	
Treasury Department proper .	255,742,425.94
Reduction in interest and paid-in surplus	40,000,000.00
Interest on the Public Debt .	925,000,000.00
Public Debt Retirements . .	582,515,000.00
Old-age Reserve Account . .	500,000,000.00
Total, Treasury Department .	$2,303,257,425.94
War Department:	
Military	$415,263,154.00
Non-military	183,819,697.00
Panama Canal	10,573,760.00
Total, War Department . .	$609,656,611.00
District of Columbia	$47,785,141.00
Total appropriations . . .	$7,043,685,474.91
Deduct amounts payable from:	
Postal revenues	$755,000,000.00
District of Columbia revenues . .	42,785,141.00
Total payable from general fund	$6,245,900,333.91
Relief	1,500,000,000.00
Grand Total payable from general fund	$7,745,900,333.91

Note: The above appropriations include $245,083,541 of reappropriations of unexpended balances of prior years.

(D. W. B.)

BUENOS AIRES, capital of Argentina, situated on the Rio de la Plata; area, 115sq.m.; population (official est. 1935) 2,388,645, making it the largest city south of the equator, and the world's second Latin city. With its suburbs, it has approximately 3,500,000 population. The city is co-terminous with the federal district and entirely distinct from the province of Buenos Aires. It is governed by a mayor appointed by the president of the republic, and an elected council. The year 1937 was distinguished by a remarkable building boom which, it was predicted, would exceed that of 1928. The most important constructions begun, apart from office and apartment buildings, were a huge underground parking space beneath the city streets, which is expected materially to reduce traffic congestion, and new government buildings, including a new edifice for the ministry of finance, estimated to cost 7,415,609 pesos (approximately £445,000). The municipality itself was preparing a 50-million peso building programme. Buenos Aires is the most important port in South America. In 1936, 84 per cent. of Argentine imports entered through it.

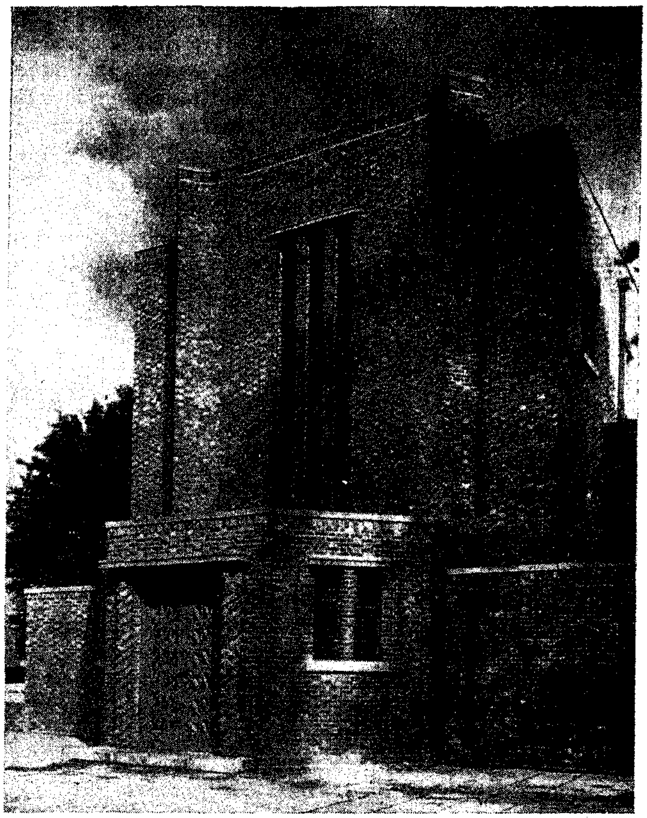
BUILDING AND BUILDING INDUSTRY.

Building is one of the most diverse and competitive of industries in Great Britain, and its prosperity in a large measure is dependent upon intense organization, co-operation, and co-ordination in all its branches. Efforts are continually being directed towards improving the standard of technique and amenity in every building erected, while with new materials and methods of construction, close collaboration with the scientist has become increasingly imperative. Education in building technology must therefore be framed to fulfil the highly specialized requirements of the numerous branches of the industry.

During 1937, activity in the industry generally maintained a high level, despite the threat that the demands of the armament programme would dislocate normal trade and that there would be a shortage of steel. Happily, this anxiety was allayed by those in control and by the government's action in controlling the price of steel. All the indications point to a steady continuance of production. Though undoubtedly there was a falling off in speculative house building in the London area, it has continued actively in other parts of the country. There is still a great deal of housing work to be accomplished in carrying out the government's plans for dealing with slum clearance, overcrowding, and the like. As a result of the increased prosperity in national industries, commercial and industrial building has made a good showing, and the easier position with regard to steel supplies should stimulate still further work of this class.

Research.—As a result of close collaboration between the various branches of the industry and those responsible for scientific research in the production and application of new materials, mechanical appliances, etc., development and speed in construction are noticeable in many directions. Reinforced concrete, although at one time hampered by by-laws made before its general use, has now made rapid strides, to the great benefit of the cement industry. Development will be further encouraged now that the efforts of the industry to get the authorities to amend the regulations have been successful.

Steel-framed buildings continue to be in general demand on account of the rapidity with which they may be erected. Electric arc welding has been used with success in certain types of the larger buildings of this class. With the exception of certain civic buildings, the impedimenta of masonry is being discarded in favour of brick and concrete panel walls faced with stucco, or artificial stone, faience, metal, and glass veneers. On the continent of Europe and in America, glass brick walls are being used with increasing success. By this method, unlimited light may be admitted to a building without departing from the normal standards of steel-framed construction. This is ideal for industrial buildings, and a rapid development may be expected in this form of construction, when certain technical difficulties have been overcome. Internally, glass, wood, stone, and metal veneers, in conjunction with concealed lighting, have been developed to a very high degree, and are now accepted as the normal standard of good building practice.



Architecture Illustrated]

WEST FRONT OF METHODIST CHURCH AT HENDON. EXAMPLE OF BRICK FACING IN TONES OF BROWN AND PURPLE. ARCHITECTS: WELCH AND LANDER, F.R.I.B.A.

Architects have responded to the public's increasing demand for a living architecture, by designing elevations which are in many cases essays in architectural composition. Straightforward solutions of design problems have been produced by clever handling of contrasting masses and shapes, relieved by simple surface treatments or sparsely used detail. The proximity of modern work with its fresh and interesting expression, tends in many cases to increase the obsolescence of older buildings, and necessitates a desire for their reconstruction. Depreciation in this respect should provide the impetus for a greater volume of new work. (N. KE.)

United States.—The recovery in building construction, which showed encouraging progress in 1936, started 1937 with even brighter prospects, but suffered a setback towards the middle of the year, especially in the residential field. Its total volume will, therefore, show only a small net advance over 1936, remaining at approximately one-third of the 1929 or one-fourth of the 1925 (peak year) figure.

Building has been the industry hardest hit by the depression and the slowest to revive. Normally, its activities are divided, roughly half and half, between residential and non-residential construction. Even in 1929, when it had suffered considerable decline, it was estimated to be a nearly $6,000 millions industry. In 1933 and 1934 it dropped almost out of sight. Only the extensive volume of non-residential public works kept it alive.

The failure to build new dwellings during so many years has produced a housing shortage as acute as that which followed the World War. There is general agreement that two million new dwelling units are required besides the unfit ones which need replacing. Yet apparently the demand is not effective, or the industry has failed to interpret it correctly. Some observers believe that the present need is for rental units rather than home ownership, and all agree that the largest potential market lies among income groups below those to which the industry has catered in the past.

In the hope of hastening the recovery of this basic industry, Mr. Roosevelt addressed a special message to Congress on Nov. 29, 1937, urging certain legislation which may prove helpful to private enterprise in residential construction. For building by public authorities, *see* HOUSING: *United States.*

BIBLIOGRAPHY.—Publications of the U.S. Bureau of Labor Statistics; Publications of the F. W. Dodge Corporation; Message of President Roosevelt to Congress, Nov. 29, 1937; *The Housing Market*, report by the National Housing Committee, Dec. 3, 1937.

BUKHARIN, NIKOLAI IVANOVICH (1888–), former Bolshevist leader, born and educated in Moscow; joined the Communist Party, 1904; was exiled in 1910; escaped and joined Lenin in Austria, where they published *Pravda*, of which Bukharin was later editor in Russia (1918–28). During the War he worked with revolutionaries in Switzerland, Scandinavia, and New York; and returning to Russia after the February Revolution, he assisted in the organization of the October Revolution, becoming a member of the Higher Economic Council. In 1926 he succeeded Zinoviev as president of the executive committee of the Communist International, but, accused of falsifying Marxism into a scholastic sociology and suspected of Trotskyist leanings, he was removed in 1928. After submission, and in spite of his opposition to the liquidation of the kulaks, he was readmitted to the party and office in 1929; became editor of *Izvestia* in Feb. 1934, but in March 1937 he, with Rykov (*q.v.*), was expelled from the party after being found guilty of betraying the Communist cause and working for the restoration of capitalism. He published a number of works on economics and theoretical communism.

BULGARIA (*Blgariya*), a kingdom of south-eastern Europe and member of the League of Nations. Bounded W. by Yugoslavia, N. by Rumania, E. by the Black Sea, S.E. by Turkey, S. by Greece. Ruler, King Boris II; flag, white, green and red, flown vertically.

Area and Population.—The area is 39,825sq.m. Population (1936) 6,254,000. According to the 1926 census, 81·3 per cent. of the population were Bulgarians, 10·5 per cent. Turks, 1·9 per cent. Pomaks (Bulgarian Moslems), with Germans, Jews, Armenians, Greeks, Russians, etc. The national Church is the Bulgarian Orthodox Church, to which in 1926 4,568,773 persons belonged. There were 789,296 Moslems, 46,931 Jews, 40,347 Catholics, etc. The non-State religions enjoy wide autonomy. Education is free, compulsory, and for the most part State-controlled, although there are also private institutions. The largest towns, with their populations, are Sofia (287,976), Plovdiv (Philippopolis) (100,485), Varna (70,183), and Ruschuk (49,388).

Constitution and Political History.—After a somewhat unhappy period of parliamentary government since the War, a band of officers made a *coup d'état* and dissolved Parliament on May 20, 1934. The Constitution was suspended, and the political parties dissolved; although the particular group forming the government was not always the same. On July 4, 1936, M. Kiosseivanoff was appointed prime minister and minister of foreign affairs. On Oct. 21, 1937, a new electoral law was promulgated, providing for universal suffrage for both sexes (an innovation in Bulgaria). Communists, adherents of violence, State and communal functionaries, and persons without gainful occupations are excluded from the passive suffrage. No party nominations or party candidates are allowed. It was expected that elections would be held in the spring, after which parliamentary life, if not party life, would recommence.

A decisive step was taken along the road, entered upon some three years previously, of reconciliation with Yugoslavia by the signature, on Jan. 24, of a treaty, article 1 of which simply declared that 'there will be inviolable peace and sincere and perpetual friendship between the kingdoms of Yugoslavia and Bulgaria'. In fact, relations between the two countries became cordial, and the barbed-wire entanglements on the frontier were removed. The Macedonian Revolutionary Organization seemed to have lost its power. The idea of a customs union with Yugoslavia was bruited.

Trade, Communications, and Finance.—Bulgaria is predominantly agricultural. The chief article of export is tobacco, followed by eggs, fruit, cereals, and live animals. Industrial articles are imported, as although industry is State-assisted, its development remains rudimentary. By far the most important customer and source of supply is Germany, which in 1936 supplied 1,940,000 of Bulgaria's total of 3,181,000 levas' worth of imports and took 1,800,000 out of 3,911,000 levas' worth of exports. The trade balance has been favourable since 1933. The budget was balanced in 1937 at 6,163 million levas, and in 1937 at 6,912 million levas (ordinary receipts, 6,344·5 million levas). The leva is nominally 0·7224 gold cents, but premiums are allowed, varying according to the groups of goods and the different foreign currencies.

Defence.—Bulgaria is still bound by the Treaty of Neuilly to limit her army to 20,000 of all ranks, enlisted by voluntary service. The strength of the active army in 1937 was 1,062 officers and 19,030 other ranks. *See Annuaire Statistique* (Sofia, annual). (C. A. M.)

BURMA. Burma lies on the eastern side of the Bay of Bengal, between India and Siam. It fills the vast basin of the Irrawaddy river, rises into the tangled mountain mass on the borders of China, and runs down along the sea in a narrow strip into the Malay peninsula, its length from one extremity to another being quite 1,200m. It has an area of 233,492sq.m., and a population of 14,667,146, of whom 84 per cent. are Buddhists. If certain hill tracts and unadministered areas are included, the total extent of the country is nearly 262,000sq.m. The capital cities of Lower and Upper Burma respectively are Rangoon (pop. 400,415) and Mandalay (pop. 147,932); with the exception of Moulmein (pop. 65,506), there is no other town of importance.

Up to 1937, Burma was a province of British India. On April 1 of that year it was separated from India and placed directly under the Crown, with a governor (Sir Archibald Cochrane) and a legislature of its own. Its constitution is incorporated in the Government of India Act of 1935. The legislature consists of a senate of 36 members and a house of representatives of 132 members; and the administration is in the hands of a council of ministers, who are at present six, and may not exceed ten, in number. A High Court sits at Rangoon, and there are 36 civil districts.

Burmese is the mother-tongue of nearly 9 millions of the people; but there is a great variety of languages (of the Mon-Khmer and Tibetan-Chinese families) spoken in the Shan States and along the frontiers generally. Owing to the ubiquitous monastic schools, the standard of literacy is far higher than in India, practically one in every two men, and one in every seven women, being able to read and write in their vernacular. There is a university at Rangoon, but secondary education is not pursued with the same assiduity as in India.

Of the total area, less than 12 per cent. is cultivated, but over 14 per cent. is occupied by forests. Except in a dry zone in Upper Burma, rice is grown everywhere, and irrigation is little required. Oilseeds come a poor second; and a certain amount of cotton, tobacco, rubber, and tea are produced. Of the forest produce, teak has the lion's share, but there are many other admirable timbers which are not yet appreciated in the world's markets. The mineral wealth of the country is considerable. Rubies, which were once actively mined, have been killed by synthetic competition; but 6 million ounces of silver is a normal output, and iron, copper, jade, tin, and wolfram are all met with. Petroleum, however, which is largely brought down by pipe-line to the Rangoon docks, is by far the leading export, with a normal output of 250 million gallons or over; and lead, found in the northern Shan States, ordinarily yields 70,000 to 80,000 tons. Fisheries are a source of revenue, as salt fish is in the staple diet of the people.

The Shan States (62,000sq.m.) are within the administrative area of Burma, but are managed by their own chiefs under the supervision of a special commissioner. The same official also advises the chiefs of the independent Karenni States. (Me.)

BUSINESS CYCLES. Any particular boom-depression sequence, or any particular country's experience, is likely to vary from the standard pattern of cyclical movement in trade, industry, and prices. Therefore, statements about the position on the business cycle reached by the world as a whole in 1937 can only be in general terms. Recovery from depression, which had been noticeable in some countries from 1932 or 1933 onwards, though delayed in others, continued into 1937, but halted before the end of the year. If the turning-point of the cycle be taken as the moment, either when rising costs overtake higher prices and larger turnover, and thus restrict the profitability of industry, or when the output of capital-goods industries begins to decline, then most of the chief industrial countries with liberal economies had passed a peak of the curve during 1937. The same is probably true of the enclosed-economy countries, though these had to some extent insulated themselves from the world cycle.

The second of the two tests is the more susceptible to statistical measurement. In the United States, the index of production of investment goods (*Federal Reserve Board*), after rising to a peak of 104·1 (1929=100) in Aug. 1937, fell to 94·4 in September, and continued to fall. The total of building contracts awarded fell sharply from $321,600,000 in July to $207,100,000 in September. In France, the index of building activity began to decline in May, and that of steel production in August. In Great Britain, the output of iron and steel was better maintained, but the figures of new building (both private houses and commercial structures) showed a downward trend after July; and the building boom had been of outstanding importance in the earlier reflationary period. In Germany there was no visible recession in building or in the production of investment goods before the end of 1937.

Primary producing countries, such as Australia or Argentina, likewise showed little reduction of internal prosperity, though their balances of trade (*q.v.*) were sharply affected by the fall in commodity prices after April.

The course of world prices by itself would be misleading in this connexion; for whereas the slump of 1929 onwards was preceded by no inflation of commodity prices, there was such an inflation in the early months of 1937, the liquidation of which would not necessarily imply a downward phase of the business cycle. (H. V. H.)

BUTTER: *see* Dairy Farming and Produce.

C

CABALLERO, FRANCISCO LARGO (1869–), Spanish Labour leader and statesman, came of peasant stock and worked as a mason, but was early caught up in the trade union movement, and later became secretary of the General Union of Workers and chairman of the Spanish Socialist Party. Imprisoned seven times for Socialistic activities, and in 1917 sentenced to death (but afterwards released); after the Revolution he was minister for labour in Azaña's Provisional Government of 1931, holding office till 1933. In Oct. 1934 he was imprisoned on a charge of complicity in the Asturian revolt and, though the public prosecutor called for a sentence of 30 years' imprisonment, he was acquitted by the Supreme Court in Nov. 1935.

Disliking the coalition with the Left Republicans, Caballero resigned his chairmanship of the Socialist Party in Dec. 1935, and on Sept. 4, 1936, succeeded Señor Giralt as premier at the head of a Popular Front ministry, which remained in office (*see* SPAIN) till May 15, 1937, when dissatisfaction with the conduct of the extremist element included in it led to the resignation of Señor Caballero. On May 17, following the hope expressed by President Azaña that a more moderate cabinet of 'Public Salvation' might be formed, a strictly Popular Front government was formed by Dr. Juan Negrin (*q.v.*).

CABINET, THE, of Great Britain, as reconstituted after the resignation of Mr. Baldwin in May, 1937, was as follows:

Prime Minister and First Lord of the Treasury	Mr. Neville Chamberlain.
Lord President of the Council	Viscount Halifax.
Chancellor of the Exchequer	Sir John Simon.
Lord Chancellor	Viscount Hailsham.
Secretary of State for Home Affairs	Sir Samuel Hoare.
Secretary of State for Foreign Affairs	Mr. Anthony Eden (resigned Feb. 20, 1938).
Lord Privy Seal	Earl De La Warr.
Secretary of State for Dominion Affairs	Mr. Malcolm MacDonald.
Secretary of State for the Colonies	Mr. W. Ormsby-Gore.
Secretary of State for War	Mr. L. Hore-Belisha.
Secretary of State for India and Burma	The Marquess of Zetland.
Secretary of State for Air	Viscount Swinton.
Secretary of State for Scotland	Mr. Walter Elliot.
President of the Board of Trade	Mr. Oliver Stanley.
First Lord of the Admiralty	Mr. A. Duff Cooper.
Minister for the Co-ordination of Defence	Sir Thomas Inskip.
Minister of Agriculture and Fisheries	Mr. W. S. Morrison.
President of the Board of Education	Earl Stanhope.
Minister of Health	Sir Kingsley Wood.
Minister of Labour	Mr. Ernest Brown.
Minister of Transport	Dr. Leslie Burgin.

The following ministers do not hold a seat in the cabinet:

First Commissioner of Works	Sir Philip Sassoon.
Minister of Pensions	Mr. H. Ramsbotham.
Chancellor of the Duchy of Lancaster	Earl Winterton.
Postmaster-General	Mr. G. C. Tryon.
Paymaster-General	Lord Hutchison.
Attorney-General	Sir Donald Somervell.
Solicitor-General	Sir Terence O'Connor.
Lord Advocate	Mr. T. M. Cooper.
Solicitor-General for Scotland	Mr. J. S. Reid.

See also GOVERNMENT DEPARTMENTS, BRITISH.

CABINET MEMBERS: UNITED STATES. The following are the members of President Roosevelt's cabinet, all of whom served without change through 1937:

Post	Name	State
Secretary of State	Cordell Hull	Tennessee
Secretary of the Treasury	Henry Morgenthau, Jr.	New York
Secretary of War	Harry H. Woodring	Kansas
Attorney-General	Homer S. Cummings	Connecticut
Postmaster-General	James A. Farley	New York
Secretary of the Navy	Claude A. Swanson	Virginia
Secretary of the Interior	Harold L. Ickes	Illinois
Secretary of Agriculture	Henry A. Wallace	Iowa
Secretary of Commerce	Daniel C. Roper	S. Carolina
Secretary of Labour	Frances Perkins	New York

CAIRO. The outstanding developments which Cairo underwent in the course of 1937 were: an improvement in suburban communications, *e.g.* the road to the Pyramids, the approach to which has been facilitated by a subway, and the railway to Helwan, the well-known thermal station, which has been transformed from a single-line railway to a double-line Diesel car system; an increase in building, which has completely transformed certain quarters; and an intensification in traffic, which has greatly increased the difficulties of circulation. The increase in traffic is evident from the registration statistics for the city, which have risen to 14,781 vehicles, or one for every 88 inhabitants. The decennial census shows an increase in population to 1,307,422, or a quarter of a million increase over 1927. Cairo continues to be the most populated city in Africa. In July, there were great celebrations in honour of the coming of age of King Farouk, who went in full state to Parliament for his investiture. In December the 18th International Ophthalmic Congress was held in Cairo.

CALCUTTA. Calcutta is the second largest city in the British Empire, having a population, if Howrah and the suburbs are included, of 1,485,582, of whom 70 per cent. are Hindus and 25 per cent. Moslems. The capital of the Bengal Presidency, it was also before 1912 the capital of British India. It is the centre of the jute-manufacturing industry, and possesses one of the most important harbours in the East, although it lies 80m. up the river Hoogly from the sea. Calcutta proper has an elected municipal corporation, with 96 members, and an income of £2·8 millions: Howrah and the various suburban municipalities have separate boards. The Calcutta Corporation in 1937 decided to give preference in its appointments to qualified candidates who had been political *détenus*. The port trust has 20 members, an annual income of over £2 millions, and a capital debt of £18·7 millions. An improvement trust has

been driving fine new roads through the congested areas of the city, and laying out handsome residential suburbs.
(ME.)

CALIFORNIA : *see* UNITED STATES OF AMERICA.

CAMBODIA : *see* FRENCH INDO-CHINA.

CAMBRIDGE UNIVERSITY. The numbers of junior students in residence in the Easter term of 1937 were nearly as before : about 5,400 men and 500 women. The men who matriculated in the Michaelmas term of 1937 numbered 1,706 ; not quite so many as in some years of the decade, but more than half as many again as in the last Michaelmas term before the War. Of degrees there is nothing noteworthy to report, except that the Ph.D. was conferred in 1936–37 upon 76 persons, a considerable advance upon any year since the institution of primary degrees for research. Two new chairs, of comparative philology and mediaeval history, were established and filled during the year. Being both on the arts side, they help to redress the balance between arts and science, which recent creations of scientific professorships have tended to disturb.

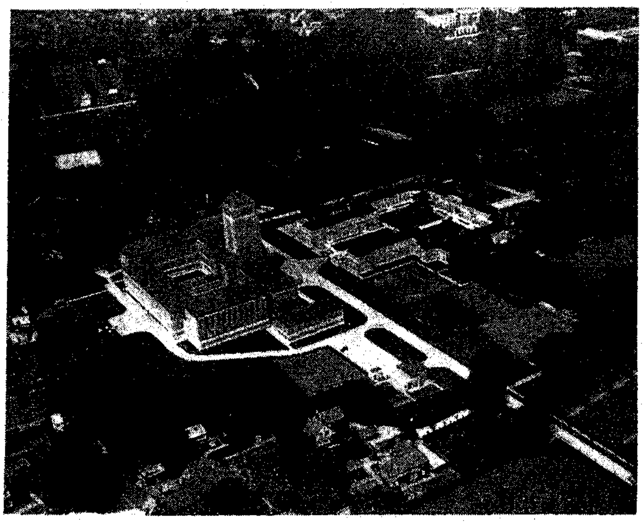
The busiest years of building and rebuilding are over ; but work on a new home for anatomy proceeds ; a mathematical laboratory is to be built as an abode for calculating machines of wide application and great precision ; and the Pitt Press building, now fully restored to its proper use, has been repaired, to the great benefit of its façade.

The Fitzwilliam Museum continues to receive valuable accessions. Its eminent director, Sir Sydney Cockerell, retired at Michaelmas 1937, after a long tenure of office, in which the fame of the museum rose high.

Of the losses due to death during 1937, it must suffice to mention the gravest. After Clerk Maxwell, Rayleigh, Thomson, to be the fourth professor of experimental physics was an arduous task, but Ernest Rutherford (Baron Rutherford of Nelson) did not fail. He died in the fullness of his powers, while he had it in him to add yet greater lustre to the Cavendish Laboratory over which he had presided since the War. (E. HAR.)

CAMEROONS. This former German colony is administered partly under a British and partly under a French mandate.

The **British Mandate** comprises a strip of territory extending north-east along the eastern frontier of the protectorate of Nigeria, from the bight of Biafra to Lake Chad. Area, 34,081sq.m. ; population (est. 1936), African 825,234, European 382. The mandate is administered as part of Nigeria (*q.v.*), and all Nigerian ordinances apply. The main product is cocoa, other exports being palm-oil and palm-kernels, rubber and bananas ; chief port, Tiko. Total imports (1936), £242,588 ; exports, £445,459. Revenue (1935–36), £184,771 ; expenditure, £233,178.



Sport and General]

CAMBRIDGE : AN AERIAL VIEW OF THE UNIVERSITY LIBRARY. ARCHITECT : SIR GILES GILBERT SCOTT

The **French Mandate** comprises the greater part of the former German colony. Area, 166,490sq.m. ; population, 2,192,000. The territory has administrative and financial autonomy. Yaoundé is the capital, and the chief port Duala. Coming improvements to the harbour here were announced in Jan. 1937, together with an extensive programme of road and bridge construction. In 1936, there were 2,950m. of road, 318m. of railway, and 1,150m. of telegraph. The territory produces ground-nuts, palm-oil, almonds, and hides. Imports (1936), Frs.87,800,000 ; exports, Frs.94,200,000. (*See* also Patrick Balfour, *Lords of the Equator*, 1937.)

CAMPING, CANOEING, AND CARAVANNING. The International Federation of Camping Clubs held its fifth camp in August, near Wiesbaden, Germany. Nearly 4,000 people, representing nine nations, attended. New members were the Royal Automobile Club of Hungary, and the new Swiss Camping Club. The Dutch Camping Club celebrated its 25th birthday at Amersfoort ; the Camping Club of Great Britain and Ireland opened a permanent camp commemorating its founder, Mr. T. H. Holding, and gave the first television broadcast of camping and caravanning. In the United States, the Girl Scouts, Inc., held an international rally and the Boy Scouts of America a national jamboree, attended by over 27,000 boys.

Canoeing clubs of the world have combined into an International Canoe Federation which holds championship races for all types of canoes. Racing canoeists are preparing for the 1938 championship at Stockholm. The British Canoe Union represents the British canoeing interests. The canoe section of the Camping Club of Great Britain and Ireland organized river tours and regattas during the summer and the German Canoe Union organized the Wiesbaden international camp.

The American Canoe Association formed a Dixie division with headquarters at Jacksonville, Florida. Its members explored unfrequented waters in northern Florida.

Caravans or trailers from all over Europe joined the international camp at Wiesbaden. The British Caravanners Club (section of the Camping Club of Great Britain and Ireland) issued a new journal in January, as did the reorganized Caravan Club of Great Britain and Ireland in December.

In the United States, the sale of trailers slumped because of previous over-selling, consequently the trade is undergoing readjustment until it reaches stability.

The British Public Health Act, now in force, may affect campers and caravanners, since temporary dwellings may not be inhabited for more than 42 days at a time or 60 days a year on one site, except by licence.

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CANADA. The year 1937 may be described for Canada as one in general of further industrial advance out of the depression that reached its lowest point in the spring of 1933. Salient features of this economic recovery are seen in the increase of industrial production, export trade, and mining output. During the first eight months, the index of physical production averaged only about 6 per cent. below that of 1929, the most active year in Canadian business. Expressed as a percentage of the base year of 1926, this index averaged for the first eight months 121·6 as compared with 129·1 for the same period in 1929. For the month of October the index for business operation stood at its highest since 1929 (127·4). Canadian export trade for the first seven months of the year showed an increase of $113,302,000, giving a total of $617,009,774, the highest since 1930, placing Canada in the fifth rank in world trade. The favourable trade balance for the year ending July 31 was $403,961,000, as compared with $299,753,000 for 1936 and $241,854,000 for 1935. In mining output, the production of gold, despite the 'gold scare', was higher than in 1936, the production for October reaching a new high monthly figure for all time of 363,908 ounces. To June 1, copper production was 18 per cent. higher than for the same period of the preceding year, nickel 35 per cent., and asbestos 65 per cent. The estimate for the total mineral production for 1937 ($435,000,000) shows an increase over that for 1936 of $360,340,000, the highest on record. There has been a marked expansion in the iron and steel industry, and the construction trades, though still far behind the 1929 level, showed gains of 25 per cent. over 1936. An encouraging feature was the increase in carloadings despite the decline in grain movement.

For the first seven months of the fiscal year, income tax collections amounted to $99,202,556 as compared with $84,072,599 for the same period for 1936. Customs and excise revenue for the first six months rose to $159,872,000, an increase of $31,394,000; total ordinary revenue from April 1 to Nov. 30 was $360,330,131, an increase of $57,198,247 over the same period for 1936. Gross dividends for the first 10 months were $219,600,000, an increase of $41,300,000 over the same period for 1936; bond interests showed an increase of 4·7 per cent. over 1936. In the 12 months ending Sept. 1937, combined assets of the chartered banks increased by $135,000,000 to $3,340,000,000.

Employment has been steadily increasing in all but the prairie provinces, especially in Saskatchewan. Relief rolls have been reduced by 600,000 since April 1936, and now stand at 900,000 persons. The general index of employment, as tabulated in the Bank of Nova Scotia survey for Oct. 1937, shows a distinct advance in the figures of the year before, although it does not mean that the situation is as favourable as at the time of the 1929 level, as the number of those seeking employment has increased considerably.

Disturbing Elements.—One or two disturbing elements in this forward trend are seen in the fall in value of base metals; in an apparent over-production of newsprint; and in the falling off of outside markets for lumber, owing partly to the increased shipping rates. The severe depression of the stock market since August has been a decided set-back.

The gross Dominion, provincial, and municipal debt of $7,039,091,538 for the year ending July 31 is a heavy burden upon the country: the railway situation, the maintenance of two duplicate lines across the country, one private, one public, though slightly improved over last year, is still a very serious problem. The number of immigrants allowed into the country to settle is still very small, totalling only about 9,000 for the six months ending Sept. 30, an increase of but 2,000 over 1936.

Moreover, the general improvement in industry and employment has not been felt in all parts of Canada. The most discouraging feature of the situation was the continuance in western Canada to a great extent of the drought and unfavourable conditions which seem to threaten the very existence of wheat-growing over large sections of the prairies. This was particularly the case in Saskatchewan. The total wheat crop of the prairie provinces was 181 million bu., as compared with the 1936 short crop of 212 million bu., the smallest since 1914. This gives an average yield of 6·7bu. an acre, the lowest on record, as compared with 15·7 for 1928–32 and 10·4 for the drought years of 1932–36. (*See* also DUST STORMS.)

In Saskatchewan, which has 57 per cent. of the total wheat acreage in the west, the wheat crop was a complete failure except in one or two small areas. The yield for the province was only 2·5bu. to the acre. Heavy losses were also suffered in feed, grain, and fodder, owing to the severe rains in the spring and the summer drought. About 250,000 cattle were moved from the dry belt. Farm income in Saskatchewan is therefore very low, with the consequence that 500,000 people, more than half the population, were in receipt of relief during the winter 1937–38.

A large part of the wheat crop of Eastern Alberta entirely failed, but in the other sections of the province the crop was large enough to bring the average yield up to 10bu. an acre. In Manitoba, on the other hand, the situation was decidedly improved over that of previous years. The wheat crop of 53,000,000bu., 18·5bu. an acre, was larger than the bumper harvest of 1928. Hence in Manitoba the farm income is high, with a good crop commanding the highest prices obtained for a decade. No. 1 Manitoba Northern wheat, which sold in 1926 at $1·50, reached $1·36 in 1937 as compared with $1·06 in 1936. This increase in price will make the total income from the western wheat harvest for 1937 almost as great as that of the year before, but less evenly distributed.

Finance.—The economic situation of the Dominion was reflected in the legislation of both the Federal and provincial governments. The Dominion budget for 1937–38, as presented by the Hon. Mr. Charles Dunning, minister of finance, estimated expenditures at $520 millions, revenues at $485 millions, leaving a deficit of $35 millions as compared with the deficit for 1936–37 of $87,395,000, and $159,989,000 for 1935–36. There was no reduction in taxes, and no new taxes were added. Hope was held of balancing the budget within two years. On Oct. 31, 1937, the Dominion Treasury reported a seven months' surplus amounting to $33,372,600. At the same date a year before, there was an apparent deficit of $64,003,380, so the improvement for this seven-month period totals about $100 millions.

Manitoba and Saskatchewan were in the most severe financial straits: in Ontario, Mr. Hepburn showed a surplus for the fiscal year of $9,313,938·54, and a reduction of $33,128,166 in the gross debt of the province during the year. Legislation for relief, both Federal and provincial, sought to curtail assistance in direct form. Ontario appropriated $14 millions for highway improvement, which cut down to a great extent the number of the unemployed within the province. The Federal government, in co-operation with the provinces, took measures to assist in the establishment of work for unemployed young people. Dominion-provincial agreements were formed to provide for single homeless men upon farms throughout the Dominion. The Home Improvement Plan was continued for 1937. In November, the Canadian prime minister, Mr. Mackenzie King, asked the provinces whether an amendment to the British North American Act to permit Federal control of unemployment would be acceptable, but met with objections from Quebec, New Brunswick, and Alberta.

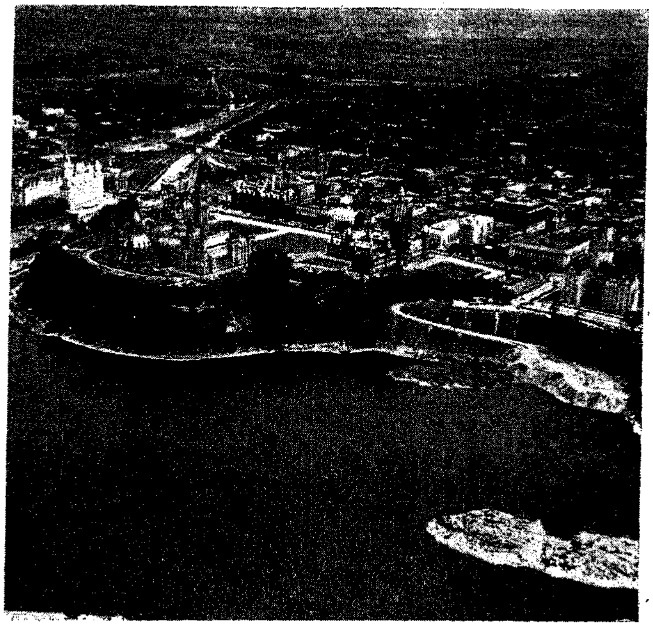
In Alberta, the legislation of the province followed (as described elsewhere: *see* under ALBERTA; ABERHART) the acute phases of the Social Credit crisis. The close of the year witnessed a situation in which the provincial legislation reducing or cancelling public and private debts awaited final settlement. Meantime the province, at the end of Nov. 1937, had defaulted to the extent of over $6 millions.

In the special session of the provincial assembly in August, proposed legislation for licensing banks and financial houses and their employees, and an Alberta press control bill to give the province wide restrictive powers, together with a bill to control credit, were refused assent by the lieutenant-governor (who holds office as a Dominion official) and later declared *ultra vires* by the Supreme Court at Ottawa. This whole matter is still pending, no final decision being possible short of the Privy Council.

The Rowell Commission.—An event of importance was the appointment in August of a royal commission of five, with Mr. N. W. Rowell, chief justice of Ontario, as chairman, to investigate the economic and financial basis of the constitution in the light of economics and social developments of the last 10 years, which may lead to the revision of the British North American Act. A group of expert economists, headed by Dr. W. A. Mackintosh, of Queen's University, was named as research staff for the commission. The commission is to visit each province, and to hold sittings to hear the proposals of the various governments as to the conditions within the provinces. By Dec. 15, 1937, the Rowell Commission had sat at Winnipeg and Regina. In Manitoba, it was claimed by the provincial government that unless help was given the province, it would be forced to default. It was proposed that the Dominion government should cancel its relief loans (about $22 millions) to the province and capitalize at 3½ per cent. the annual provincial subsidies, which would mean the assumption of $52 millions of the provincial debt. The remainder of the provincial debt would be refunded at 3½ per cent. with the co-operation of the Dominion. It was stated that at present the tax rate is 40 per cent. higher in proportion to the income than the average of the provinces. The population of the province is 6·75 per cent. of the Dominion, and the national wealth since 1928 has been but 5 per cent. The government of Saskatchewan in its official brief suggested subsidies, new taxes, tariff reductions, and a shift to the Dominion of social services and debt burdens.

Other developments of interest were the adoption of the plans for a Trans-Canadian Air Line which began operation on Sept. 1. Mr. S. J. Hungerford, president of the Canadian National Railway, was appointed president. Fifty-one per cent. of the stock was given to the Canadian National, private companies being allowed to participate in the ownership of the remainder but 'profits to be strictly limited'. A large part of the national defence budget of $34,999,871 (an increase of $7,205,570 over that of 1936) was for the building of aeroplanes, landing grounds, etc.

Canada and the Empire.—The relations of Canada within the Empire were those of continued harmony and goodwill, which contrasted with the somewhat anxious situation at home. In the spring, a new Anglo-Canadian trade agreement was drawn up to go into effect Sept. 1. This replaces the agreement drawn up at the time of the Imperial Conference in Ottawa (1932), tending towards freer and more open trade and providing for a large number of reductions in the Canadian customs tariff under the British preference, while Canadian exports are guaranteed preferences or free entry covering an extensive list of foodstuffs and manufactured commodities.


R.C.A.F. Photo]
FEDERAL PARLIAMENT BUILDINGS, OTTAWA. AN AERIAL VIEW

The Coronation of May 12 was attended by a large number of Canadians. Among those officially representing Canada were Mr. Mackenzie King, the prime minister; the Hon. Vincent Massey; Rt. Hon. R. B. Bennett; Hon. Charles Dunning; Hon. Ian MacKenzie; Hon. Raoul Dandurand; and a military contingent of 334 of all ranks. The Imperial Conference of 1937, opening in London two days later, was attended by a Canadian delegation headed by the prime minister. Till the end of the year nothing had been officially announced as to the proceedings of the conference except mere generalities.

Senator Raoul Dandurand was appointed head of the Assembly of the League of Nations. He later attended the Nine-Power Conference on the Sino-Japanese conflict. Trade pacts with Australia and New Zealand were renewed and a new one was made with Guatemala. An important trade agreement was made with Belgium, Canada's third best customer for 1936 with a trade of $30 millions, a figure expected to double during 1937.

Canada and the United States.—Relations with the United States continued on the footing of assured goodwill. In July 1936, President Roosevelt visited Ottawa. In the following March the governor-general of Canada and Lady Tweedsmuir visited Washington. President Roosevelt included a visit to Victoria, B.C., in his western tour in October, and the American secretary of State, Mr. Cordell Hull, made a two weeks' 'goodwill tour' during the same month to Ottawa and Toronto, where he received an honorary degree from the provincial university.

The tourist trade between the two countries was the heaviest yet known. Canada has begun to realize the wealth of this trade and to capitalize on it, especially in the maritime provinces. Roads have been improved and made more accessible for the tourist; various booklets have been published and press bureaux established at the cost of millions of dollars. It is estimated that in 1936 about

$10 millions was spent by United States tourists in the Maritimes, a considerable increase over previous years. It is also estimated for 1936 that the expenditure of American tourists in Canada exceeded those of Canadian tourists abroad by about $170,500,000 ($247 millions spent by visiting Americans as against $76,523,000 spent by Canadians in the United States). Although figures for 1937 are not complete, an increase of almost a million tourists was recorded during the first half of the year, when 6,374,339 visitors entered Canada from the United States as compared with 5,409,331 for the same period of 1936.

Trade with the United States, stimulated by the reciprocal treaty of Nov. 15, 1935, showed an increase. Comparing the years ending Aug. 1936 and 1937, imports from the United States rose from $340,004,000 to $453,816,000; domestic exports from Canada to the United States from $383,563,000 to $481,158,000. A new trilateral trade pact is under discussion as between England, Canada, and the United States. This, however, can scarcely assume final form until well into the year 1938. It is generally understood that Canada will give up several valuable exclusive concessions in the British market in order that American producers may share them. The Dominion will receive in return trading concessions with the United States market.

Politics.—The Dominion government continued under the administration of the Liberal Party under the leadership of Mr. MacKenzie King as prime minister, elected to power Oct. 14, 1935. The political changes of administrations and parliaments in the nine provinces are duly chronicled in their respective places (*see* under ALBERTA, etc.). But for comparison's sake it can be noted here that general elections were held in three of the nine provinces in 1937. In June, the Liberals in British Columbia, under Premier Pattullo, were returned to power by a large majority (31 out of 48 seats). In a Federal by-election in Victoria in December another seat was gained by the Liberals. In the election in Nova Scotia on June 29, the Liberal premier, Mr. Angus Macdonald, was re-elected (the party winning 25 of the 30 seats). In Ontario on Oct. 6, the Liberals were returned to power with Mr. Hepburn as premier for a second term. The Ontario contest excited wide interest throughout the Dominion as reflecting in part the newest phase of the Labour movement in the conflict between craft unions of the older type and the new industrial unions, and the question of the political significance of the latter type. With the new organization had appeared the newer methods of sit-down strikes, etc. Mr. Hepburn's victory at the polls was very widely held to represent a public disapproval of the new unionism. In April, there had been an outbreak of sit-down strikes in the province, by far the most significant one a sixteen-day strike at the General Motors plant at Oshawa. Mr. Hepburn's insistence on getting rid of the United States union representative of the C.I.O and refusing to put the strikers on relief, led to the resignation of the Hon. Mr. Croll, minister of welfare, and the Hon. Mr. Roebuck, attorney-general. It also determined Mr. Hepburn to call an election for the autumn, well before the end of his term.

In November, Mr. Albert Matthews was appointed lieutenant-governor of Ontario, to succeed the Hon. Dr. H. A. Bruce, whose five-year term of office expired in October. The government decided at the same time to abandon the institution of a Government House, hitherto placed by the province at the disposal of the lieutenant-governor.

Events in the world of art and letters were the various regional drama festivals and the Dominion festival held at Ottawa in March. In November, national book fairs were held in Toronto, in Montreal, and elsewhere. Canadian Poetry Night was celebrated in Toronto, Nov. 24. Mr. Emile Brunet of Montreal was awarded the *Grand Prix* at the Paris Exhibition for his relief work. Dr. E. W. Archibald was named doctor of medicine, *honoris causa*, by the University of Paris. The annual historical art exhibition of the National Gallery took the form of a one-man exhibition of the work of the late James Wilson Morrice.

In educational matters, an important event was the appointment of Dr. Lewis Douglas, of Arizona, well known in the United States as member of Congress and director of the budget (1933–34), to the post of principal of McGill University.

Personalities eminent in Canadian affairs who died during 1937 included the following: (in January), Brother André, Prof. Edmund Broadus; (in February) Dr. Francis A. Scrimger, Maj.-Gen. Sir Frederick Loomis, Senator Patrick Burns; (in March) Hon. P. C. H. Primrose; (in June) Brig.-Gen. C. A. Smart, Sir Robert Borden, Rt. Hon. Sir William Lloyd; (in July) Sir Charles Saunders; (in September) Senator Rodolphe Lemieux; (in October) Sir Thrasher Cook; (in November) Rev. Dr. Charles W. Gordon ('Ralph Connor'), Hon. Dr. Simon F. Tolmie; (in December) Sir Andrew Taylor, and Sir Douglas Hazen, chief justice of New Brunswick. (S. LEA.)

CANADIAN LITERATURE. Of literature in Canada in 1937 there is more than usual to be said, chiefly because literature has been saying more than usual for itself —through a new 'loud speaker' called the Book Fair. Two such exhibitions were held in November by the Association of Canadian Bookmen, an alliance of publishers and booksellers with authors and librarians. The Canadian publishers' business is chiefly that of selling books published in the United States and Great Britain; but a large space was set apart for Canadian books, arranged by the Canadian Authors' Association. The number, variety, and quality of these native books astonished readers still under the impression that all books of great literary value and interest must originate in other lands. The new literature produced in Canada during the year showed at least no falling off in spirit or material, with perhaps increased attention to form, especially in the making of verse. If no new star of first magnitude appeared, most of the older stars maintained their rank. Death claimed two, Charles Gordon, whose 'Ralph Connor' tales enjoyed enormous popularity for many years, and Annie Charlotte Dalton, M.B.E., outstanding poet, of Vancouver.

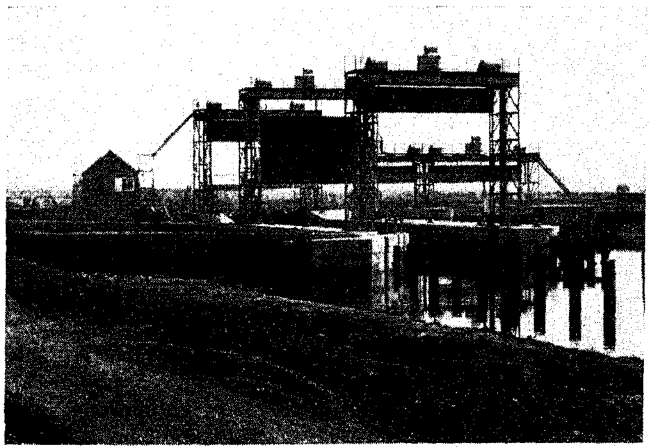
The governor-general's two medals, for the best works of fiction and other prose published in Canada in 1936, were awarded respectively to Bertram Brooker of Toronto, for his novel *Think of the Earth*, and the late T. B. Roberton of Winnipeg for his *Newspaper Pieces*. Lord Tweedsmuir also promised a medal for the best poem of the year in the *Canadian Poetry Magazine*, published under the auspices of the Canadian Authors' Association. The *Seranus* prize for poetry was awarded to Dr. George Herbert Clarke, of Queen's University, Kingston.

The high aim of the movement from which the Association of Canadian Bookmen arose was to spread the reading habit until the Canadian people as a whole should be a reading people, with well-stocked and well-used bookshelves in every home. So far as these book fairs can be regarded as a step in that direction, their chief value may be found to lie in the interest aroused among the impressionable boys and girls, of whom thousands came. The adult visitors were almost wholly of the reading class already. Less elaborate and far less costly book fairs are now being held in smaller towns, where it seems possible to attract a larger proportion of the citizens. To reach the rural population, especially in outlying regions where bookless homes are most common and book-shops non-existent, other means have still to be devised. (H. A. K.)

CANALS AND INLAND WATERWAYS. Under this head are considered the progress and alterations made throughout 1937 in the chief waterways of the world. The canal industry in Great Britain has been under a cloud for so long and the prospects of its resuscitation continue to be so disheartening that there is very little to record in the way of actual development and expansion during the past 12 months or so. Following the energetic enterprise which led to the amalgamation of eight separate undertakings under the control of the Grand Union Canal Company with the carrying out of an important programme of improvements, including the 51 new locks on the Warwick Section of the canal, completed in 1934, combined with the improvement by the Trent Navigation of the section of the river between Newark and Nottingham, where a number of new locks have been constructed during the past 10 years, there has been a lull in constructural activity.

The most notable event of 1937 has been the opening of the Dog-in-a-Doublet lock and sluices in the tidal section of the river Nene, for the purpose of removing a shoal, regrading the river-bed, and improving the channel for navigation. Prior to the carrying out of the improvement, there was an obstruction in the river two miles below Peterborough, due to the existence of the Northey Gravels, which had been of service in the past by acting as a natural weir, keeping back the brackish tidal water and so maintaining a source of fresh water above the shoal for a supply to the town of Thorney. The construction of the weir has enabled the shoal to be dredged without detriment to the Thorney water supply, and the needs of navigation have been further met by the construction of a lock, 145ft. long and 26ft. wide, capable of receiving vessels 133ft. long by 22ft. wide, with a loaded draught of 9ft., while other locks on the river are being reconstructed to receive canal barges, 78ft. long by 14ft. 6in. wide, with a loaded draught of 4ft. 6in. The Dog-in-a-Doublet lock is at the extremity of the tidal portion of the river Nene, and the new structure has been designed to meet a tidal variation of about 11 ft., with a normal head of 9·5 ft. on the upstream side of the sluice.

Various improvements of a minor character have been made in other rivers, not merely for the purpose of facilitating navigation, but conjointly in the interests of land drainage. Since the passing of the Land Drainage Act, 1930, a number of bodies known as catchment boards have come into existence in England and Wales, and these now exercise control over the watersheds of all the leading rivers. Mainly occupied with flood prevention and water conservancy matters, in certain cases the same bodies have taken over navigation responsibilities, and in other cases they have co-operated with conservancy authorities to improve navigable channels. The work on the river Nene is a case in point. On the river Lee, a considerable scheme of improvements has recently been effected in the West Ham area through the joint action of the Conservancy Board and the West Ham Corporation, whereby a number of straggling streams, known as Stratford Back rivers, have been widened, deepened, and, in places, diverted, so as to add to the navigation system about two miles of canal, with a constant water level entered at two points from the main stream without the aid of locks. In Hackney and Tottenham districts the river has also been widened and improved for navigation.



Lilian Ream]

DOG-IN-A-DOUBLET SLUICES AND LOCK FROM UPSTREAM

France.—In other countries of Europe, there has been considerable activity of late in increasing the efficiency of internal waterways. Work in France has been carried on under a programme approved by the Higher Council of Public Works, which includes dredging operations for widening and deepening the channels of rivers, the removal of awkward bends, the electrification of lock operating machinery and the reduction in the number of weirs. Notably in the first category come the improvements effected in the navigable waterways connecting the Paris Basin with the northern coalfields, so as to afford a passage for craft drawing fully 7ft., whereas the previous limit was less than 6ft. The unit load capacity has thereby been increased from 280 tons to 350 tons, without perceptible increase in the cost of transport. Dredging has also been done on the canal systems of the Marne, the Rhine, and the Rhône. Electrification of lock machinery has been carried out on the Rhine–Rhône Canal below Strasburg, and on the canalized sections of the rivers Oise and Scheldt.

Belgium.—In Belgium, the Charleroi to Brussels Canal has been widened and deepened so as to be able to accommodate 1,350-ton boats, whereas it was originally constructed for craft of 70 tons only. Work is well forward on the Albert Canal about 70m. in length, which is to connect Liége and Antwerp by a shorter route than the canalized Meuse. It has a minimum width of 85ft. (26 metres) and a depth in the centre of 16ft. 6in. (5 metres). It will be able to accommodate Rhine barges of 2,000 tons capacity. The portion of the canal lying between Haccourt and Neerhaeren is already in service.

Holland.—In Holland, following the completion of the Juliana Canal along the Maas and the Trente Canal from Zutphen to Enschede, opened in 1936, works are in hand estimated to cost over 140 million guilders. These include the canal from Amsterdam to the Rhine, the ameliorations of the river Meuse and the waterway from Groningen to the Ysselmeer (formerly Zuiderzee) and the enlargement of the canal from Amsterdam to Ymuiden and of two smaller canals.

Germany.—In Germany, on the Rhine–Main–Danube system, the first portion of the connexion is so far advanced that 1938 should see Würzburg accessible to large craft. Locks have been reconstructed between Frankfurt and Aschaffenburg so as to take larger vessels. The last section of the great high-water protection banks extending to and below the town of Stuttgart, associated with the works on the Neckar, is making such progress that during 1938 the main undertaking is expected to be completed. The canalization of the Mid-Weser from Minden to Bremen for craft of 1,000 tons has been systematically pursued, and nearly the whole extent is in hand. In the autumn of 1937, the canalization of the Werra for a length of 100km. from Münden to Wartha was begun. On the Weser–Elbe section of the Mittelland Canal, the Allerbüttel-Sülfeld locks have been completed, so that navigation is possible as far as Neuhaldensleben. By the end of 1938, the Rothensee Lift will in all probability be put into commission, thereby effecting the junction between the Eastern and Western canal systems. Many other undertakings are in various stages of progress.

Planet News]
THE MOSCOW-VOLGA CANAL. THE KARAMISHEVO DAM

Russia.—Perhaps the most notable event of the year in canal annals was the opening to traffic in May of the 80-mile waterway known as the Moscow–Volga Canal, which connects the inland port of Moscow with the river Volga, and places the former in communication with the Caspian Sea, as also through the Marinsk river system and the recently constructed Baltic–White Sea Canal, Neva River and Ladoga Canal, with the Baltic and White Seas. When the Volga is ultimately connected with the river Don, by means of the Volga–Don Canal about to be undertaken and expected to be finished by 1942, ships from Moscow will be able to traverse a deep-water route to the Black Sea. The Moscow–Volga Canal is a remarkable piece of engineering construction, comprising 200 million cubic metres of earthwork excavation, 3 million cubic metres of mass concrete work, and 450,000 cubic metres of reinforced concrete in structures. There are 11 locks to enable a passage to be made over the elevated plateau which begins a few miles from the Volga, and extends for more than 25m. along the course of the canal. In conjunction with the canal scheme, the city of Moscow has been provided with a greatly increased supply of drinking water. The river Dnepr has also been much improved for navigation by the removal of a series of rapids. A dam, a mile and a quarter in length, has been constructed at the foot of the rapids, raising the level of the river on the upstream side of the dam by over 130ft., and locks have been formed to pass traffic between the upper and lower levels. Alongside the dam, a new town of 120,000 inhabitants has come into existence. (B. Cu.)

CANARY ISLANDS, group of 13 islands (7 inhabited) in the Atlantic, off the African coast between 28° and 30° N. lat., governed as an integral part of Spain, of which they form two provinces, Las Palmas (capital, Las Palmas, in the island of Gran Canaria) and Santa Cruz de Tenerife (capital, Santa Cruz, in the island of Tenerife). Area, 2,807 sq.m.; population (1934) 599,712. The largest towns are Las Palmas (population 83,500) and Santa Cruz (66,500). Tobacco and bananas are grown, and wine and timber produced; there is a considerable fishing industry. The islands have no railways; there is an airmail and passenger service to the Spanish mainland and from Las Palmas to Tenerife, and wireless communication with Spain. For financial and commercial statistics, *see* SPAIN.

Since the outbreak of Gen. Franco's rising in 1936, the islands have been under insurgent control, and 1,500 government supporters are stated to be interned there. Efforts were made during 1937 to improve the economic condition, especially the housing, of the labouring classes, and free food centres were opened. The usually large tourist traffic was much affected by the abnormal political conditions.

CANCER. Most striking in 1937 was the work of Peyton Rous of the Rockefeller institute, in which he demonstrates that by inoculating into the ears of rabbits an emulsion from a wart-like growth (studied in rabbits by Shope and proved by him to be infectious) cancer can be obtained by administering shortly after the appearance of the harmless papilloma a moderate quantity of a known carcinogenic coal-tar. Soon after this tar injection extensive and rapidly growing aquamous-cell cancers appear in the ears, metastasize early to the other organs of the body, and destroy the animal in a few months.

This raises again the much-discussed question of the part which viruses may play in the production of tumours, both animal and human. Rous was originally responsible for this idea when he discovered that a sarcoma, a malignant tumour of the fowl, could be transferred to other fowls by the use of an extract filtered through a porcelain filter of such density that it held back all ordinary bacteria. Whether this cancer-causing agent was a chemical substance or living organism, he was unwilling to say. Later, W. E. Gye of London and others felt from their studies that the virus was probably a living creature like the ordinary bacteria.

To-day, the virus question has been entirely transformed by the discovery of W. M. Stanley, H. W. G. Wyckoff, and other workers in the field that certain viruses, notably that of the tobacco plant, possess some of the properties of the living organism, in that they can multiply; but on the other hand they are crystallizable, and hence are presumably proteins of very large molecular weight, as shown by their sedimentation rate. The whole subject needs much more study and cannot be considered as finally settled. The most probable explanation of the action of the combined virus and tar treatment is that the virus in some way starts the growth of the epithelial cells to form a papilloma, and thus sensitizes the cells to the action of the tar, for under normal conditions tar-painting is not a very effective method of producing cancer in rabbits, most of the growths described being mere papillomata.

The extraordinary discovery in the past few years of rather simple chemical substances which produce cancer in large numbers in animals has been extended both in London under E. L. Kennaway, J. W. Cook, and their colleagues, and at Harvard University in Boston by L. F. Fieser and his collaborators. These carcinogenic substances have been used to confirm the work of F. D. Bullock, M. R. Curtis, and W. F. Dunning on their somatic mutation theory governing the production of cancer; they have been employed in obtaining a large number of interesting types of tumours, now including those from almost all the organs of the body in animals, and in connexion with their effect in producing oestrus in animals. Intricate chemical studies are under way to determine just what arrangement of the hydrocarbon molecule produces the carcinogenic effect. This means the production and testing on sensitive animals of a very large number of compounds. In general, those of simpler composition are most effective. Investigations are in hand to find whether any of these compounds are present in the bodies of those with developing cancer, whether or not they may be present in food, may be developed by cooking, and a host of similar aspects. E. C. Dodds and his collaborators at the Middlesex Hospital, London, have chosen to work in this field, and a large series of compounds has been discovered capable of producing oestrus or heat and of inducing mating in animals. Some of these are not related to the carcinogenic hydrocarbons: for instance, two known as diphenylethylene and triphenylethylene are highly potent.

In other fields there has also been great activity. For example, the production of large quantities of neutrons in an apparatus known as the cyclotron developed by Ernest O. Lawrence at the University of California has permitted the investigation of the biological effects of these uncharged particles, and according to experiments so far conducted, these neutrons seem to be more effective in the destruction of cancer than their charged relatives, the electrons, which are the present basis for the treatment of cancer by X-ray and radium. In addition, Lawrence has been able to produce a large amount of artificial radioactive substances, among them a form of common salt which gives off powerful radiations, but loses its strength very rapidly, falling to one-half in about 14 hours. This suggests the possibility of injecting the salt into a tumour, because it is not poisonous, except for its capacity to radiate. Other compounds, such as radioactive vanadium, have also been produced which have a longer life, and therefore may to a certain extent replace radium, but these isotopes of a higher atomic weight are much more difficult to produce in quantity and require far greater amounts of energy.

In response to this synthesis of radioactive elements, together with the successful surmounting of engineering difficulties in the production of extremely high voltage X-rays, the price of radium has fallen from $120,000 per gramme to $25,000 per gramme. High voltage X-ray apparatus will probably shortly replace the use of large quantities of radium in the so-called packs, for the X-rays produced at 1 million volts are practically equivalent to radium, are cheaper, give a much deeper penetration into the tissues, permit the treatment of a number of patients at a time, and have certain useful qualities making their development a distinct advance in the treatment of cancer. (F. C. W.)

(*See* also RADIOTHERAPY.)

CANNING INDUSTRY. The outstanding tendency of the canning industry throughout the world during 1937 was improvement in quality. This naturally led to increased co-operation within the industry and with other industries. For this purpose canners' associations were maintained throughout the world. In some countries the officers of these associations had official government status, and in others government experimental stations and colleges co-operated in the improvement of canning technology and the production of canning crops. In 1937, all these forms of co-operation became more effective.

During the year, the first International Canners' Convention was held in Paris, and was attended by representatives of eight of the leading canning countries. The purpose of the convention was the establishment of a permanent international body for standardizing rules and regulations affecting the canning and labelling of foods. The substitution of corrosion-resistant materials for those formerly employed in canning equipment was marked during 1937, and the employment of cold reduced plate has been greatly increased in order to reduce the corrosion of tin plate used in packers' cans. At the close of the year, cold reduced plate constituted approximately 45 per cent. of the tin plate used for canned foods, whereas a year earlier it constituted only 30 per cent.

Equipment was developed during the year which is expected to aid in improving the quality of canned foods. For instance, the 'Tenderometer' intended to determine the tenderness of raw peas used for canning, and the tubular blancher, which provides an improved way of blanching peas, are both designed to improve the quality of that product.

Increased information on the processing of non-acid products was made available, and the development of new types of processing equipment and improved processing procedure was regarded as a marked advance in the art of processing (sterilizing) canned foods.

There was a steady increase in output in the canning industry of Great Britain in 1937, whilst the pack of the industry of the United States was the largest on record.

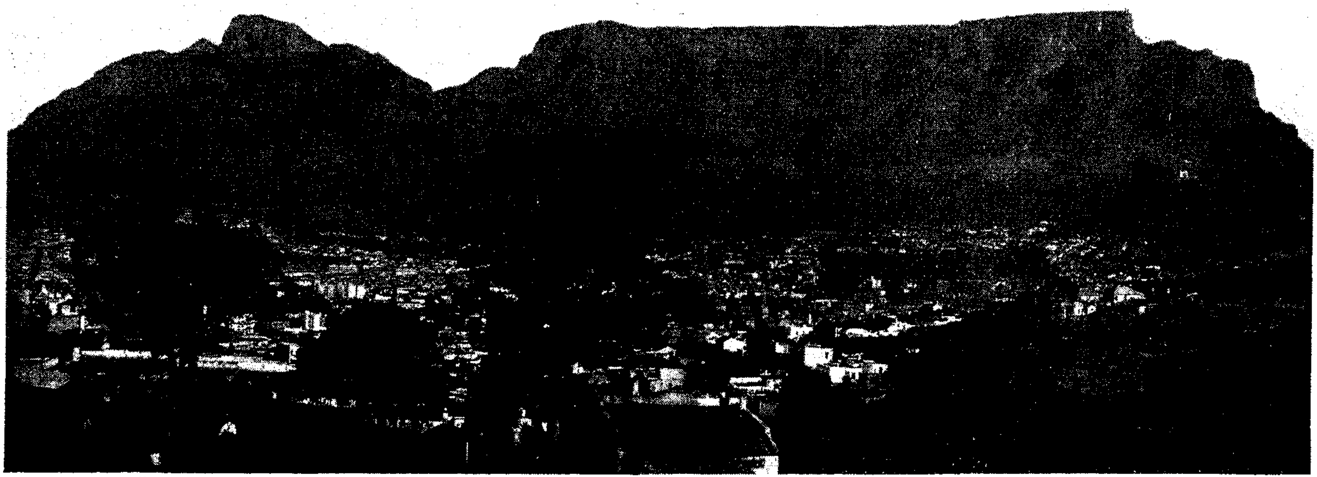
For fruits, vegetables, specialities, fish, and milk, over 10,000 million cans were used as containers, in addition to a large quantity of glass containers. For perishable vegetables alone, the products of over 1,500,000ac. were used for the canning industry.

CANTERBURY, ARCHBISHOP OF, COSMO GORDON LANG. A biographical note may be found in the *Ency. Brit.*, vol. 13, p. 691, *s.v.* LANG, COSMO GORDON.

His Grace had thankless and trying tasks to perform in connexion with the abdication of King Edward VIII in Dec. 1936, and on the last Sunday of that year broadcast to the nation a 'Recall to Religion', a message that was warmly welcomed by all denominations and was received as a summons to national re-dedication. At the autumn session of the Church Assembly, encouraging evidence of response to the recall was noted, though it was stated that this response was less satisfactory in rural than in urban districts.

In May, at the coronation of King George VI and Queen Elizabeth, the Archbishop, next to their Majesties themselves, was the most important personage in the vast concourse in Westminster Abbey, for it was he who, following immemorial usage, performed the ceremony of the actual crowning, after having presented the sovereign to his people.

At the summer meeting of the Church Assembly in June, Dr. Lang publicly censured the Dean of Canterbury (Dr. Hewlett Johnson) for a sermon preached in Canterbury Cathedral in June upholding the Spanish government, after a visit paid to the government forces.



South African Railways and Harbours]

CAPETOWN WITH TABLE MOUNTAIN IN THE BACKGROUND

CAPE OF GOOD HOPE. One of the four constituent provinces of the Union of South Africa (*q.v.*), this is the most southern territory of the African continent, and comprises all the Union territory south of the Orange river and between South-west Africa on the west and the Indian ocean on the east. The administrator is the Hon. J. H. Conradie, and the administrative centre is Capetown (*q.v.*). The province has a provincial council consisting of the same number of members as are elected to the House of Assembly. The executive committee is elected by the council, and consists of four members with the administrator as chairman. The council may issue ordinances for the province on specified matters subject to parliamentary approval, recommends laws to parliament, and administers provincial revenue. The Cape is the only province which has, by Act of 1856, units of local government, the divisional councils. It has also an example of native local government in the Bunga (council) of the Transkei.

Area and Population.—The area, including Walvis Bay (430sq.m., part of the province but administered by South-west Africa) and the Transkeian territories (16,554sq.m.), is 277,169sq.m. The 1936 census figures give the following population: Europeans, male 396,269, female 395,125; Bantu, male 918,160, female 1,126,950; coloured, male 342,725, female 339,106; total population 3,518,335. The chief towns, with preliminary census figures, are Capetown (335,371), Port Elizabeth (109,824), East London (60,550), Kimberley (40,229).

The sources of provincial revenue are: a subsidy from the Union government for education; revenues collected by the Union government, *e.g.* liquor licences, trading and professional licences (£1,821,896 in 1935); and a specified list of taxes or fees in regard to which the province has legislative powers. Total revenue for 1935–36 was £5,500,053, and expenditure £5,768,439.

In Aug. 1937 plans were announced for a great scheme of harbour development at Capetown, which includes the reclamation of 236 acres of Table Bay, and will more than triple the shipping accommodation of the port. A new central railway station is to be built as a part of this scheme at a cost of nearly £3 millions. A vast oil depot, to hold 200,000 tons, at Yserplaatsvlei, two miles from Capetown, is also projected, and the city is to spend £6 millions on a 12-year scheme of slum clearance and rehousing. For the history of the province in 1937, *see* SOUTH AFRICA, THE UNION OF.

CAPETOWN, the seat of legislature of the Union of South Africa (*q.v.*) and administrative centre of the Cape of Good Hope (*q.v.*) province, is situated on the coast between Table Bay and False Bay. The population (1936 preliminary figures) is 335,371, including 171,534 Europeans and 164,837 non-Europeans.

Noteworthy extension systems were planned during 1937. Early in the year, the government decided upon an expenditure of £2,250,000 during the next four years on the development of the harbour. On Aug. 23 plans were announced by which the area of the city would be doubled by means of land reclamation from the sea, and by laying out an area equal to the city's present area. The scheme provides for the complete rebuilding of the foreshore, for a big new railway station and a new city hall. It is hoped to employ many thousands of men for ten years on this work, and that the city will enjoy a consequent period of great prosperity.

CAPE VERDE ISLANDS, an archipelago belonging to Portugal, lying off the West African coast, between 17° 13′ and 14° 47′ N. and 22° 40′ and 25° 22′ W. The total area is 1,557sq.m., and the population 153,182, including about 6,000 Europeans. The islands are some 15 in number, and are divided into two groups, in relation to the prevailing north-east wind: Barlavento (windward) and the Sotavento (leeward). The seat of the governor is at Praia. There are over 150 primary schools and a secondary school in Sao Vicente. About 100 ships a year call at the islands, and Sao Vicente is an important coaling station. Revenue and expenditure for 1937 were estimated at £157,374 and £155,442 respectively.

CAPITULATIONS. The Capitulatory régime, which had existed in Egypt as part of the Ottoman dominions from mediaeval times, giving special immunities and privileges to foreign nationals, came to an end on Oct. 15, 1937. On that date, under the terms of the Convention signed at Montreux on May 8, 1937, between Egypt and the Capitulatory Powers (Great Britain, France, Italy, the United States of America, Greece, Belgium, Holland, Denmark, Norway, Sweden, Spain, and Portugal) the consular courts were closed for all judicial business concerning their respective nationals, except matters of personal status. The Convention allowed the Capitulatory Powers to opt for the retention of jurisdiction in these last-named matters by their consular courts for the duration of the 12-year transition period for which it was agreed the mixed tribunals would continue to operate.

The penal and other jurisdiction in regard to foreigners hitherto exercised by the consular courts being transferred to the mixed tribunals, a reorganization of these latter courts became necessary to meet the extra work entailed. Under the Convention, during the transition period the president of the mixed court of appeal is to be a foreigner, as also is the procureur-general, who will direct the judicial procedure in penal matters as regards foreigners, and will be assisted in his work by two advocates-general, one an Egyptian and the other an Englishman. The latter will, in the absence of the procureur-general, be responsible for the judicial administration in penal matters concerning foreigners.

The Egyptian government has agreed, for this transition period, to certain safeguards in the matter of discriminatory legislation and the expulsion of foreigners, and with regard to the régime to be enjoyed by the educational, religious, medical, and charitable institutions created and administered in Egypt by the various Powers.

Under the Montreux Convention, whatever consular courts remain open for the handling of personal status matters will be closed on Oct. 14, 1949, when the mixed tribunals will be merged in the national jurisdiction, and foreigners will become amenable in all matters to local legislation and local jurisdictions in the same way as Egyptian nationals. (A. Mn.)

CARAVANNING: *see* CAMPING, CANOEING, AND CARAVANNING.

CARNEGIE TRUSTS. During 1937, the trustees of the *Carnegie United Kingdom Trust* (Comely Park House, Dunfermline—sec., Lieut.-Col. J. M. Mitchell) proceeded with their fifth quinquennial programme of educational and social experiment begun in 1936, when several new lines of policy were defined for the period 1936–40. The chief features of the present programme are important allocations for land settlement (£150,000); music (£30,000 in grants and guarantees to amateur choral and orchestral societies in affiliation with the National Federation of Music Societies); social services, including village halls (£25,000), boys', girls' and young farmers' clubs; adult education, covering also an experiment for the 18 + age group (£20,000) and museums (£15,000). In addition to assistance for the National Central Library (£4,000 a year for five years), and to the Scottish and Irish Central Libraries (approx. £2,000 a year each), the total allocation set aside by the trust for library purposes during the five-year period amounts to £30,000. Of this, £25,000 is available for the provision of county library branches in new housing areas, and £5,000 for grants in aid of small municipal libraries which may decide to amalgamate with their county schemes.

Grants are no longer available for special, borough or (for ordinary purposes) county libraries, playing fields, and organs.

In addition to the Carnegie United Kingdom Trust, there exist also in Great Britain: (*a*) *The Carnegie Trust for the Universities of Scotland,* whose income of £120,000 a year is divided between bursaries to students and advanced research work; (*b*) *The Carnegie Dunfermline Trust,* which conducts a wide range of activities in Dunfermline, Fife; and (*c*) *The Carnegie Hero Fund Trust* (sec., J. W. Ormiston, Abbot Street, Dunfermline), which disburses a large income in the form of awards to persons for acts of heroism in attempting to save human life.

United States.—The trustees of *The Carnegie Corporation of New York* during 1937 appropriated a total of $3,650,000—for library interests, $500,000; adult education, $400,000; fine arts and museums, $500,000; research and publication, $750,000; general educational purposes in schools, colleges, universities, etc., $1,500,000. The amount appropriated since 1911 totals $162 millions.

The five other Carnegie organizations in the United States which were founded by Mr. Carnegie for specific purposes before the establishment of the corporation, with endowments now ranging from $10 millions to $30 millions, followed their established programmes.

The Carnegie Institute of Pittsburgh is the counterpart of the Dunfermline Trust in Great Britain.

The Carnegie Institution of Washington expended $1,700,000 in its programme of encouraging research and discovery, and the application of knowledge to the improvement of mankind, specifically by work in astronomy (Mt. Wilson Observatory), terrestrial magnetism, geophysics, animal and plant biology, and historical research (especially in Yucatan).

The Carnegie Hero Fund Commission made 60 awards of medals, or of funds for worthy purposes, in recognition of acts of heroism, bringing the total number of awards since 1904 to 2,965, and the total of money grants to $5 millions.

The Carnegie Foundation for the Advancement of Teaching paid $1,875,000 in retiring allowances to retired college professors, or their widows, making a total of $33 millions paid for such purposes since its establishment.

The Carnegie Endowment for International Peace expended $650,000 in its efforts to further friendly understanding among the nations of the world. The year marked the completion of the great co-operative enterprise, begun in 1914, of the preparation of the economic and social history of the World War, which resulted in the publication of 152 volumes. Continued progress was made also in the study of Canadian-American relations, the findings of which are being reported in 44 volumes.

CAROLINE ISLANDS: *see* PACIFIC ISLANDS, MANDATED.

CASEIN: *see* PLASTICS INDUSTRY, THE.

CATTLE AND MEAT. Roughly speaking, about 3 million calves are born every year in Great Britain. Of these one-third are killed for veal. To the 2 million which are reared are added about half a million store cattle imported mostly from Ireland. Of the 2½ millions about 1½ millions are eventually fattened and slaughtered for beef. The remaining million is required for replacing the dairy and breeding herds.

In Great Britain cattle are reared for beef production and for milk production. Of the two end products the total output of milk is worth twice as much as that of beef and veal. This interconnexion is of great significance. For instance, some 40 per cent. of British beef is cow-beef, the cast-offs of the dairy herd; similarly a proportion of the veal output consists of the unwanted male calves from dairy herds. Most of this unintentionally produced beef and veal is of poorer quality than imported beef and fetches lower prices. (For numbers of cattle, beef output, prices, and subsidy, *see* AGRICULTURE.) The sheep industry has no analogous problem. Wool has long ceased to be a principal occupation of sheep farmers. Consequently, British mutton and lamb are, on the average, of higher

Sport and General]

PRIZE-WINNING CATTLE AT THE ROYAL AGRICULTURAL SHOW, WOLVERHAMPTON, 1937

(*Left*) Hereford bull, Vern Nonsuch, 1st prize, champion, and supreme champion. (*Right*) Three Kent or Romney Marsh Shearling Ewes, 1st prize and champion

quality than British beef and veal, and have held their own against imports more successfully.

The total output of meat has increased rapidly during recent years :—

England and Wales (Dressed Meat)

000 Cwt.

	Beef	Veal	Mutton and Lamb	Pig Meat	Total
1931–32	7,121	611	3,392	5,931	17,055
1934–35	8,523	823	3,510	6,713	19,569
1935–36	8,904	792	3,473	7,697	20,866

Figures for 1936–37 will probably be slightly below those of 1935–36. For 1935–36 an estimate of Scottish output is available : beef and veal 3,105,000cwt., mutton and lamb 1,295,000cwt., pig meat 510,000cwt., giving a total British meat output of 25,776,000cwt. This represents less than half the total requirements ; and 52 per cent. of the beef and veal, 58 per cent. of the mutton and lamb, 54 per cent. of the pig meat, and 27 per cent. of the poultry meat required are imported.

International trade in beef and mutton is largely a movement from the southern to the northern hemisphere, while world trade in pig meat is mainly confined to the northern hemisphere. Argentina is by far the principal exporter of beef, with Australia occupying second place, although the meat equivalent of the Irish Free State's exports of live cattle would place that country before Australia ; then follow New Zealand and Uruguay. The chief exporter of mutton is New Zealand, followed by Australia and Argentina. Denmark exports considerably more pig meat than any other country. The British Empire is a net importer of all meats due to the large import demands of the United Kingdom.

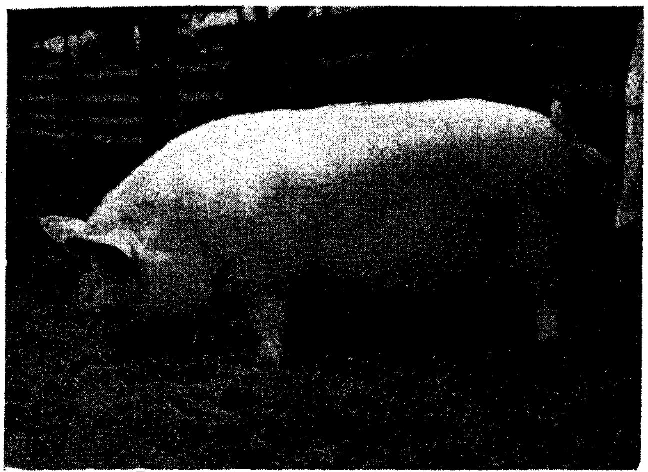
The United Kingdom received by far the largest proportion of world export of beef, and is, in fact, the only country with an appreciable demand for chilled beef. The amount of beef imported into the United Kingdom has been fairly constant for the last five years (*i.e.* 12½ million cwt.) but rose in 1937 to over 13 million cwt., of which nearly three-quarters was chilled. In addition 650,000 live cattle were imported. As in the case of beef, the United Kingdom is the chief market for mutton and lamb, taking as much as 95 per cent. of the world exports in recent years. Imports into the United Kingdom in 1937 were also heavier than the previous two years, being over 7 million cwt. Lamb imports were more than three times as large as mutton imports.

International trade in pig meat is dominated by the movement of bacon and hams and frozen pork to the United Kingdom. Denmark supplies about half of all the bacon imports into the United Kingdom. In 1937 the United Kingdom imported over a million cwt. of pork, nearly 7 million cwt. of bacon, and 675,000cwt. of ham.

South American countries are the principal exporters of canned meat, the United Kingdom the largest importer, deriving the bulk of its supplies from these countries. The United States is also a large importer of canned meat.

During 1937, the tendency in the United States has been for prices of all meats to rise, but the full effect of this has not been felt by the consumer because the butcher has refrained from passing on the increase in the hope that he would recoup himself in the autumn when wholesale prices have usually eased. Contrary to the expectation the rise has been maintained throughout the year, and the trader, unable to withstand it himself any longer, must adjust his prices to present circumstances. The prospect, therefore, in 1938 is still higher prices.

The largest meat-producing countries in the world, New Zealand, Australia, and Argentina, are also the largest meat eaters, their total consumption of meat per head being well over 200lb. The people of Argentina eat more beef, averaging more than 200lb. per head, but only 13lb. of mutton and lamb and 35lb. of pork. New Zealanders consume most mutton and lamb, about 100lb. per head, 150lb. of beef per head, and 18lb. of pork. Germany appears to be the largest consumer of pork, with 76lb. per head of the population, with Canada, United States, and Denmark running her close. The meat consumption in Great Britain, the United States, and Canada averages about 140lb. In Canada and the U.S.A. pork accounts for about half on average, and beef for most of the remainder ; while in Great Britain beef represents 65lb., pork 45lb., and mutton 30lb. Less meat generally is consumed by European countries. Germany eats more pork than beef, France more beef than pork, and neither



Sport and General]

PRIZEWINNER AT THE ROYAL AGRICULTURAL SHOW, 1937

Middle White Sow 'Wratting Garland 3rd'. 1st prize, champion, and supreme champion

any material amount of mutton, their aggregate consumption of meat being approximately 110 and 90lb. per head respectively. (C. A. Mo.; P. L. Y.)

CAYMAN ISLANDS: *see* JAMAICA.

CELEBES ISLANDS: *see* NETHERLANDS INDIES.

CENTRAL AMERICA, the region between Mexico and Colombia, embracing the six republics of Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Panama and the Panama Canal Zone, and the colony of British Honduras. Area, 215,420sq.m.; pop. (est. 1937), 6,900,000. The main population centres are on the highland plateau adjacent to the Pacific. The total annual foreign trade is about £24 millions in value. Coffee, bananas, cabinet woods, and some gold comprise the main exports; in British Honduras chicle and hemp are important. The general trend of Central America was towards political stability and economic betterment in 1937. Education and literacy vary from country to country, with Costa Rica the most advanced country, and Honduras the least.

CENTRAL AUSTRALIA. The name Central Australia was formerly used officially for an oblong area of the Northern Territory lying below latitude 20° S., while the area above was known as North Australia. This division, effected for administrative purposes, March 1927, was, however, repealed by an Act of June 12, 1931, and the whole of the area bounded by the 26th parallel of south latitude and the 129th and 138th degrees of east longitude was placed under the Northern Territory.

CENTRAL INDIA AGENCY. This is a group of Indian States lying astride and north of the Central Provinces. On the east, separated from each other by the Kaimur range of hills, are the Bundelkhand and Baghelkhand States, of which the largest is Rewa (ruler, Maharaja Sir Gulab Singh, with a salute of 17 guns). On the west are the Central India States proper, of which the more important are Indore (Maharaja Shri Yashwant Rao Holkar: 19 guns) and Bhopal (Nawab Sir Hamid-ullah Khan: 19 guns). The total area is 52,710sq.m.; and population 6,648,306. The agent to the governor-general has his headquarters at Indore (pop. 127,327).

CENTRAL PROVINCES AND BERAR, a major province of British India. For the status of Berar, *see* HYDERABAD.

The British province (governor, Sir Hyde Gowen) has an area of 99,920sq.m. and a population of 15,507,723, of which 86 per cent. are Hindus. The chief towns are Nagpur (215,165) the capital, and Jubbulpore (124,382). Marathi (in Berar), Western Hindi, and Eastern Hindi are about equally prevalent languages, and nearly a million (mostly in hill and forest tracts) speak Gondi. About 10 per cent. of the men and under 1 per cent. of the women are literate in the vernacular; barely half a million attend school and college.

The legislative assembly number 112. The cabinet of seven is Congress in politics, Dr. N. B. Khare being premier.

The chief agricultural products are, in millions of acres occupied by them: pulses (6·8), rice (5·6), millets (4·5), cotton (4·3), wheat (3·4), and oilseeds (2·2). There are 11 cotton mills in the province, with about 6,500 looms. Over a million tons of coal are raised in the province, and it is rich in deposits of manganese.

CEREALS: *see* GRAIN CROPS.

CEYLON. A British crown colony, lying off the southern extremity of India and approaching within 6° of the equator. The area is 25,332sq.m., and the population 5,312,548. The capital, Colombo, has a population of 284,155. Jaffna has 45,708, Galle 38,424, and Kandy 37,147. The governor (Sir Andrew Caldecott since 1937) is assisted by a board of ministers, and a State council of 60, elected by all adult Ceylonese, male and female.

The economics of Ceylon are dominantly agricultural. Coco-nut palms occupy about 1,100,000 acres, and rice 850,000 acres. Rubber in 1936 was planted in 605,000 acres, and tea in 558,000 acres, the latter giving employment to 700,000 labourers imported, not under indenture, from India. The total imports into the island in 1936 were valued at £16·1 millions, and the total exports at £18·3 millions. The imports are multifarious, rice, cotton goods, and oils being most prominent. The exports are mainly tea (£11·5 millions) and rubber (£3·5 millions). The United Kingdom takes half the exports and provides about one-fifth of the imports. The weights and measures are as in Great Britain; the coinage is in rupees and cents.

Maldives.—This is an archipelago about 400m. south-west of Ceylon, to which it is nominally a tributary, sending an annual embassy to Colombo. Population 79,281, all Moslems. The Sultan resides in Malé, a small island 3m. in circumference. Coco-nuts, millets, and fruit are cultivated. (ME.)

CHACO, an undeveloped region in South America (area, about 100,000sq.m.) between Bolivia and Paraguay, and claimed by both. A five-year war over its possession was terminated by an armistice in June 1935, and representatives of six other American nations met those of the disputants in a conference at Buenos Aires in an effort to effect a permanent settlement. In May 1937, the two nations were persuaded to resume diplomatic relations, and in August an effort to withdraw Paraguayan troops and create a neutral zone precipitated the overthrow of Paraguay's dictator, President Franco. Continued political instability, in Paraguay especially, precluded further attempts at rapprochement in 1937, although the conference continued its efforts.

CHAD: *see* FRENCH EQUATORIAL AFRICA.

CHAIN STORES: *see* MULTIPLE SHOPS.

CHAMBERS OF COMMERCE in Great Britain in 1937 numbered 107 chambers associated with the central body, the Association of British Chambers of Commerce, whose president for the year was Sir Geoffrey Clarke, C.S.I., O.B.E. The work of its executive council continued to operate as in previous years through its three permanent committees, namely, the finance and taxation committee, the home affairs and transport committee, and the overseas committee. Various sub-committees were formed for special functions.

The association has been very active in watching the interests of the British trade generally and particularly in regard to taxation problems, and was largely instrumental in having part of the Finance Bill in connexion with the National Defence Contribution (growth of profits tax) withdrawn. Also continuous representations to the postmaster-general have resulted in better facilities, particularly in the air-mail section.

The membership of the affiliated chambers in 1937 was almost double that of 1914. The figures are:

	1914.	1937.
England and Wales	19,800	34,718
Scotland	2,960	5,109
Ireland	513	625
British Chambers abroad	644	5,156
Total recorded Membership	23,917	45,608

In the United States, chambers of commerce continued their evolution as part of the American business and social machinery. There are now about 2,000 organized chambers of commerce, besides other organizations that operate somewhat similarly. They are financed usually by voluntary subscriptions or membership fees. Their budgets, varying widely, average about forty cents *per capita*. Staffs range from one man and a stenographer in smaller communities to a general manager and numerous departmental chiefs in larger centres.

Chambers of commerce originally were concerned primarily with the exchange of commodities, the price of goods, transportation, and the laws of trade. But as American cities grew they became civic organizations as well as business promoters. During the World War they extended their activities, as also in the depression of 1929. Significant in 1937 was the adoption by many chambers of policies respecting industrial relations. These policies were not in opposition to organized labour or in support of management; they were directed at the preservation of industrial peace in the public interest.

CHAMBERLAIN, (ARTHUR) NEVILLE (1869–), British statesman, son of Joseph Chamberlain; entered Parliament 1918, and the cabinet in 1922; chancellor of the exchequer 1923–24, and from 1931 till he became prime minister on the retirement of Mr. Baldwin (*q.v.*) on May 28, 1937. A biographical notice of him is in the *Ency. Brit.*, vol. 5, p. 201. His accession to the premiership involved no change of policy, but a number of changes were made in the ministry (*see* CABINET), and the first commissioner of works ceased to hold cabinet rank.

As chancellor of the exchequer, Mr. Chamberlain introduced his sixth Budget (*see* GT. BRITAIN: *Finance*) on April 20; this was chiefly remarkable for the sections relating to the National Defence Contribution (N.D.C.), which was so severely criticized in the City and elsewhere that on June 1, as prime minister, Mr. Chamberlain announced their withdrawal and their replacement by a simpler profits tax on similar lines that would produce at least an equal revenue.

On May 31, he was unanimously elected leader of the Conservative Party, at the annual conference of which he made an important speech (Oct. 8), in which he dealt with the unsettled state of Europe, welcomed President Roosevelt's declaration of the necessity for a return to a belief in the pledged word and the sanctity of treaties as evidence of America's willingness to co-operate in the restoration and maintenance of peace, and emphasized the necessity for Britain's rearmament. On June 25, in the House of Commons, he made his first important speech, as prime minister, on foreign affairs, and on July 3 visited his constituency and explained to the Birmingham Conservative Associations the main points of his policy, which, he said, were: to keep the peace, to ensure that Britain would be so strong as to be universally respected, to increase trade, employment, and prosperity, and to carry on and improve the social services. At the end of July his exchange of personal letters with Signor Mussolini did much to clear the atmosphere in regard to Anglo-Italian relations.

Elliott & Fry]

MR. NEVILLE CHAMBERLAIN

On Nov. 9, at the Guildhall Banquet, Mr. Chamberlain, besides speaking of the situation in Spain, Britain's relations with the 'Berlin-Rome axis', and 'the really astonishing economic progress which has been made by the world as a whole since the dark days of 1932', mentioned that the essential factor for success in any endeavour to bring about a settlement of the Sino-Japanese dispute was the co-operation of the United States, and that he was now engaged in informal discussions with a view to the eventual conclusion of an Anglo-American trade agreement, negotiations towards which, he announced in the House of Commons on Nov. 19, were making definite progress.

CHAMBERLAIN, SIR (JOSEPH) AUSTEN, British statesman; born in Birmingham, Oct. 16, 1863; died in London, March 16, 1937. A biography is to be found in the *Ency. Brit.*, vol. 5, pp. 201–2. After serving as First Lord of the Admiralty in the National government from Aug. to Oct. 1931, Sir Austen held no further office; but he continued to be an influential speaker in the House of Commons, as, for example, when, in 1935, he condemned the Hoare-Laval proposals with regard to the Abyssinian problem. In 1935 he was elected Lord Rector of Glasgow University. His recent publications include *Down the Years*, 1935, and *Politics from Inside*, 1936. In 1906 he married Ivy Muriel Dundas, and he had two sons and a daughter. The prime ministership, narrowly missed by both Sir Austen and his father, was attained by his half-brother, Neville Chamberlain (*q.v.*).

Elliott & Fry]

THE LATE SIR AUSTEN CHAMBERLAIN

CHANNEL ISLANDS.—A group of nine islands off the Normandy coast, in British possession, administered by lieutenant-governors appointed by the Crown, and by local, mainly elected, parliaments called 'States'. Jersey, the largest, has a separate administration; Guernsey has jurisdiction over Alderney, Sark, Herm, and the rest. Capitals: (Jersey) St. Helier, pop. 25,824; (Guernsey) St. Peter Port, pop. 16,720. Ruler and flag, as for Great Britain.

Area and Population.—Area: 75sq. m. (Jersey, 28,717 acres; Guernsey, 15,654 acres; smaller islands, 3,712 acres). Population (census 1931): Jersey, 50,462; Guernsey and dependencies, 42,743.

Religion, Language, Education.—The islands form two deaneries of the Anglican diocese of Winchester. The official language is French, still largely spoken locally; but English is everywhere understood, and may be used in the States. Education is carried on by public instruction committees on lines similar to the British; the principal educational institutions are Victoria College (Jersey) and Elizabeth College (Guernsey).

Industry, Communications.—The main industry is agriculture—fruit, potatoes, flowers, etc., being produced on small holdings. About 43,000 acres are cultivated. Guernsey and Alderney dairy cattle are famous. Trade is almost entirely with Great Britain, to which agricultural produce and granite are exported. The service on the Jersey railway is suspended. Jersey and Alderney have airports, and Jersey is linked by regular air services with Alderney, Southampton, and London.

Finances, etc.—Both Jersey and Guernsey mint their own copper coinage; otherwise British imperial currency is used. In Guernsey the State and banks issue their own £1 and 10*s*. notes. Taxation is very low. In 1936 the revenue of Jersey was £441,582, and its expenditure £429,615; those of Guernsey (1935) £567,695 and £497,273 respectively. The total debt of the islands is about £2,666,000. Service in the local militias is compulsory for adult males.

CHAUTEMPS, CAMILLE (1885–), French statesman; born in Paris; was an advocate before the Court of Appeal from 1904; Radical-Socialist deputy for Indre-et-Loire, and later Loir-et-Cher, and from 1933 senator for the latter department. In the Herriot cabinet of 1924 he was minister for the interior; in 1925–26 minister for the interior and for justice; and prime minister, for twenty-four hours, in Feb. 1930. In the Steeg cabinet of 1931 he was minister for public instruction, and again of the interior in the governments between June 1932 and Nov. 1933, when he again became prime minister until the following Jan. 27, his government being then overthrown as a result of the Stavisky affair. In the Sarraut government of Jan. 1936, he was minister for public works, and in M. Blum's government, formed in June of that year, minister of State. On M. Blum's fall in June 1937, he formed a ministry with a mandate to effect extensive economies and rescue France from a dangerous budgetary situation. In Nov. 1937 he paid a short visit to London, with his foreign minister, M. Delbos, to exchange views on the international situation with the British ministers.

CHEESE: *see* DAIRY FARMING AND PRODUCE.

CHEMICAL WARFARE. Chemical warfare comprises the use in war of what are popularly known as 'poison gases', though there are liquids giving off vapours usually included in that term which are not, strictly speaking, gases at all. For the sake of clearness they will all be described in this article as 'war gases'. Their use in war is not altogether an innovation. The Spartans used pitch, sulphur, and burning charcoal to irritate the defenders in the siege of Plataea in 429 B.C., and the use of stink bombs was not unknown in the Middle Ages. The possibility of the use of war gases was sufficiently apparent for it to be prohibited by the Hague Conventions of 1899 and 1907. The prohibition, and the wide and devastating effect, quite unforeseen by the German High Command, alike account for the indignation and consternation aroused by the German use of chlorine in the Ypres salient in April 1915. Most of the important countries of Europe, including Great Britain, adhered to the Geneva Gas Protocol of 1925, which again prohibited the use of war gases; but they all include their manufacture in their armament programmes.

Fox Photos]

ANTI-GAS TRAINING OFFICIALS SEARCHING FOR 'VICTIMS' DURING TRAINING

War gases are, broadly speaking, of four kinds: lung irritants, tear gases (or 'lachrymators'), nose irritants (or 'toxic smokes'), and blister gases (or 'vesicants'). There may also be included under the category of war gases certain gases which directly attack the nervous system, the most important of which is hydrocyanic (prussic) acid gas, a high concentration of which will kill its victim in about two minutes. A respirator is a complete protection against this gas. The war gases must be classified under two further heads, as either 'persistent' or 'non-persistent'. The latter vaporize on the burst of the projectile containing them, and conditions of high wind, heavy rain, thick fog, or

Fox Photos]

AIR-RAID PRECAUTIONS—CHILDREN FITTED WITH GAS MASKS hot sun are all unfavourable to their use. The former are vapours given off by liquids with a high boiling-point. War gases are discharged by shell or projector bombardment, by bursting grenades, and from air-ships or aeroplanes either by bombs or by sprayers.

The lung irritants, chlorine and phosgene, are true gases, and therefore non-persistent. They are stored in liquid form and vaporize on release of pressure. They are heavier than air, chlorine two-and-a-half times so, phosgene three-and-a-half. Chlorine has a choking smell, irritates the eyes and respiratory organs, and frequently leads to bronchitis or pneumonia. Phosgene is five times more lethal than chlorine, and therefore is likely to supersede it for future use. Phosgene has a faint smell of musty hay; and it tends to work its way down into cellars and 'dug-outs'. It attacks the eyes and respiratory organs, like chlorine, but with far worse effects; its action is delayed, a deceptive period of well-being intervening between the attack and its results. The respirator affords complete protection against the lung irritants.

The three types of tear gas are virtually harmless except for their temporary effects: they used to be dangerous, in that they penetrated respirators and caused the victim to remove his respirator, so leaving him unprotected against more harmful gases. But the modern respirator affords complete protection.

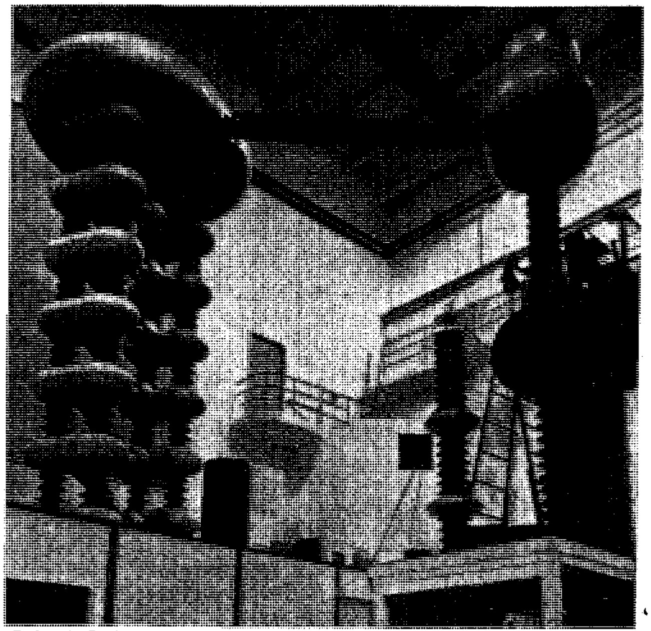
There are three types of nose irritants, all compounds of arsenic and highly poisonous: they produce burning pains in the nose, throat, and chest, followed by acute mental depression. With these, again, the respirator gives complete protection.

The blister gases are mustard gas and Lewisite. The former, when in liquid form, is either crude, and dark brown in colour (as used in the Great War), or pure, and pale straw-yellow. It is both persistent and insidious, the vapour having a faint smell only. In its liquid form it sinks into the skin, and causes severe blistering, which is very difficult to heal and readily becomes septic. In the eyes it causes conjunctivitis and often complete blindness. The vapour is less severe in its effects, but a high concentration has very serious results, and if inhaled there is a danger of broncho-pneumonia. Lewisite is colourless when pure, and brown in its crude state. The vapour is invisible, but with a strong smell of geraniums. The liquid has quicker and somewhat more severe results than mustard gas, but is readily destroyed by water or alkalis. With the blister gases the respirator alone does not afford complete protection; oilskin clothes and rubber boots are also necessary.

The blister gases constitute the most serious danger of chemical warfare. They are persistent—especially mustard gas; they are most severe in their results; they contaminate food supplies; and they penetrate nearly every material except glass, porcelain, and unglazed metals. It is impossible to work except for very short periods in protective clothing, and decontamination, which can be effected by weathering, sealing, destruction, or removal, requires great care, and in the last cases great skill. While soap and water in each case, and chlorine (in a bleach paste) in the case of mustard gas, if used in time, can remove or destroy the poison on an individual victim, successful treatment must involve clear thinking and self-control, probably in the midst of a panic. The nature of the protective clothing, and the fact that it is impossible to speak or eat in a gas-mask must impede all normal activities, and while it is perfectly possible to make rooms gas-proof, the incendiary bomb may make their occupation impossible. While, therefore, mustard gas in particular may be most useful in keeping the enemy out of an area in military operations, the real terrors of chemical warfare are reserved for its use against the civilian population. (*See* also CIVIL POPULATION, PROTECTION OF.) (W. T. WE.)

CHEMISTRY. The extent and detail of the publication of results of scientific investigations are among the striking phenomena of modern civilization. In chemistry, alone, there appeared in 1937 200 million words which were found worthy of systematic abstracting. This material was published in about 2,000 scientific journals throughout the world, and does not include books, reviews, and summaries of known material or patents. The mass of publication of new material in chemistry becomes still more significant when one considers that most of it has been condensed and compressed before publication. It is more than ever evident that science is a team activity in which the work of every scientist depends on and influences the work of every other scientist, and that it is essentially without national boundaries, even during a time when the primitive desire for national self-sufficiency has drafted the services of all the sciences, especially chemistry, that science which deals primarily with the changing of one material into another. No attempt will therefore be made to indicate individual or national achievements, and since the artificial subdivisions of science come closer together each year, this article will not make any separation of chemistry into its classical subdivisions.

Atom-Smasher.—New methods and tools catch the attention. The cyclotron or atom-smasher is properly described in the article on physics, although its results are of great interest to chemists. It gives the modern achievement of the ancient alchemical dream of converting one element into another, even though the newly found laws of such transmutations preclude the conversion of base metals to gold. Radio-sodium, a product of the cyclotron, is finding application as a substitute and supplement for radium in therapy. Radio-titanium has been added to the artificially radio-active elements. It has been possible to build up elements No. 93 and No. 94 by bombardment of Uranium (No. 92) with neutrons. The discovery of element No. 87



SPLITTING THE ATOM WITH A 1,250,000-VOLT HIGH-TENSION GENERATOR INSTALLED AT CAMBRIDGE UNIVERSITY BY PHILIPS LAMPS, LTD.

has again been announced, this time with the name of Mavadium instead of Virginium. (*See* also MATTER, STRUCTURE OF.)

Improvements in the methods for the all-important study of the composition of materials have continued. The separation between inorganic and organic methods and reagents in the analytical field is disappearing. Micro-methods have continued to become more general during the year. In fact, macro-methods in many fields are already falling into disuse. This is not merely because of the economy of material which was the original incentive for micro-methods, but because of their saving of time. The influence of these methods on the whole of chemistry can hardly be over-estimated. The polarograph has been revived for the purpose of analysing complex mixtures of organic compounds. The iridescent properties of thin sections of ores have been applied to their rapid analysis.

Large-scale molecular distillation has become important, not only commercially, but as a means of supplying hitherto rare materials in amounts sufficient for research. The increased use of highly refined fractional distillation methods has continued. The difficult problem of the composition of petroleum is gradually yielding to them and to the related methods of modern counter-current solvent extraction.

Isotopes.—The study of isotopes advanced rapidly during the year. Deuterium atoms have proved to be valuable tracers for following the course of chemical and bio-chemical processes; for instance, the formation and deposition of fats in animal organisms. The stereochemistry of deuterium compounds has been opened up. Further concentrations of the isotopes of oxygen and nitrogen have been achieved. The heavier isotopes of oxygen are more plentiful in rocks than in air and water. Heavy nitrogen will be a tracer for following the biochemistry of amino-acids and proteins. (*See* also ISOTOPES OF THE LIGHTER ELEMENTS, SEPARATION OF.)

Mathematical tools and related experimental techniques have been further developed. Their application to the 17-body system in the highly symmetrical neopentane molecule has been striking. Notable theoretical advances have been made in reaction kinetics, in the knowledge of optical rotation, in lyophylic colloids, and in viscosity. Important experimental refinements have also been developed in the latter field. Studies of the properties of simple molecules at very low temperatures have revealed new generalizations. Perhaps the most important of these deals with the lack of free rotation in molecules as simple as ethane. Insoluble mono-layers of sterols and proteins have been studied with the development of new knowledge of molecular properties. Very accurate studies have been made of the dielectric properties of solids. The heats of hydrogenation and free energies of olefins and related compounds were determined.

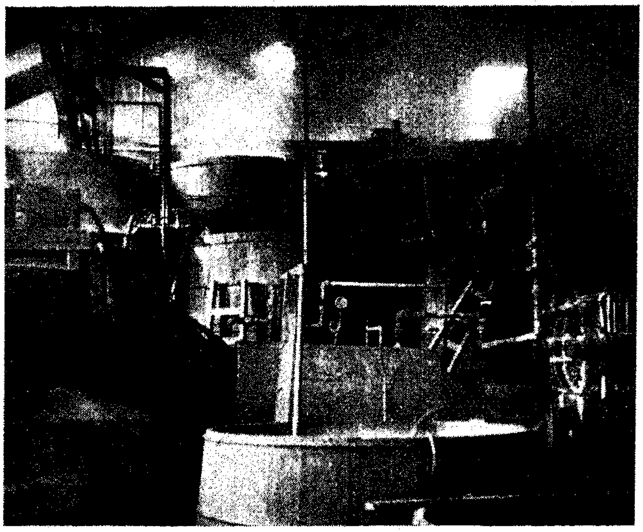
RADIUM CITY IS A HUDDLE OF LOG SHACKS ON THE SHORE OF GREAT BEAR LAKE

THE RADIUM ORE ARRIVES AT THE SURFACE LOOKING MUCH LIKE ANTHRACITE

The new tool of electron diffraction has given added knowledge of interatomic distances, especially of the C-C distance as it is influenced by other atoms. The somewhat older tool of the Raman spectrum has continued to give valuable results on even as simple a substance as water. In organic chemistry, one of the most general reactions is that involving carbonyl oxygen and alpha hydrogen. New studies of this old reaction have progressed slightly. The absence of electromers in the pentones has been demonstrated. Further work has been done on the mystery of molecular rearrangements, those strange reactions in which it is easier for a molecule to undergo an internal change than to limit itself to the external change on which the chemist has focused his mind.

Catalysis.—Catalysis has been further extended in the hydrocarbon field, including catalytic cracking, polymerization, and the new reaction involving the addition of a paraffin to an olefin. Sodium has been cheapened. Its use in organic reactions has been facilitated by the adaptation of various complex ethers as solvents. The clean cleavage of carbohydrates by periodic acid has been announced. Further applications were developed for the Diels-Alder reaction, probably the only distinctly new general reaction developed in organic chemistry in a decade. Ethylene, from cracking operations, continued as an important raw material for organic syntheses. The old reaction of chlorine with olefins to give substitution instead of addition was revived to make allylchloride and methallyl chloride, potentially important raw materials for the resin industry. Old and new organic compounds of fluorine became available in large number.

The nature and origin of coal were further studied. No



REACTION VATS AT PORT HOPE

similar studies of petroleum were pushed except that clues may be given by differences in crude petroleums from different formations. These differences are becoming more evident as modern methods of distillation and solvent extraction are being applied. Cellulose has been further recognized as one of man's most important renewable raw materials. Increasing but still inadequate studies were made during the year.

Resins.—Resins continued to attract much attention. Improvements were made in raw materials such as styrene and the methacrylates. Perhaps the most spectacular development in the resin field was the production of two resins, one of which absorbs anions and the other cations from solution. Thus, at long last, is realized the one unfulfilled prophecy of Francis Bacon, the possibility of ' straining salt from sea water '.

Progress in the chemistry of materials related to life continued unabated. Surprising unities among these materials have been developing during the past few years. The nature and relationships of the sterols, both animal and vegetable, were greatly clarified. Related polynuclear compounds were extensively studied, especially as to their carcinogenic properties. The chemistry of the products of the tubercle bacillus advanced decidedly during the year. The knowledge of plant products, including their colouring materials and their alkaloids, progressed slowly. The chlorophyll problem advanced somewhat. It was found that the alkaloid, colchicine, has the remarkable power of doubling the number of chromosomes in certain plants. Hydroxyethylapocupreine was further applied in the treatment of pneumonia.

WHILE BAGGING URANIUM FOR SHIPMENT, THE OPERATOR WEARS A MASK TO GUARD AGAINST RADIUM DUST

The crystalline giant proteins related to virus diseases were further studied, as were the vitally important amino acids and their relation to proteins. The importance of having pure crystalline products for study has been exemplified by the crystallization of catalase and of vitamin A.

Vitamins.—Developments in the vitamins went on apace. The most notable among many notable achievements was the climaxing of a 25-year study of the antineuritic vitamin (B_1) by its laboratory and commercial synthesis within the year. The relation of vitamins B_1 and B_2 to enzyme actions and the multiple nature of vitamin D were studied. The difficult problem of the fertility vitamin (E) was further advanced and a new vitamin (P) related to cell permeability was discovered. The importance of the vitamin field is evidenced by the award for 1937 of two Nobel Prizes to Szent-Györgyi and to Karrer and Haworth for work related to vitamins C and A. (*See* also VITAMINS.)

Studies of hormones continued with special emphasis on the sex hormones, which have been such prolific sources of new organic chemical studies in the past few years. A new male hormone, epiallopregnanolone, was isolated and synthesized. At least two new hormones of sexual activity have been isolated from the adrenal glands. Enterocrinin, a new digestive hormone, was isolated.

Among high molecular weight natural products, the visual purple of the retina was found to have a molecular weight of about 800,000. The highest-speed super-centrifuge was still further refined, and a less expensive model was adapted for general laboratory use. The extension of this important research tool will speed up the study of giant molecules. The yellow respiratory enzyme was further studied. Work was continued on the complex sapagenins.

The Elements.—The chemistry of the 90 elements other than carbon is due for a revival. Inorganic fluorine compounds became more prominent during the year, largely because of their relation to phosphate rock and to drinking water. Carbon dioxide was introduced into daylight incandescent lamps. Bearings of less usual metals such as silver and cadmium were introduced with mixed results, but a net increase in the knowledge of such problems. Even the old subject of the composition of the atmosphere was restudied, as was the newer one of the isotopic composition of natural waters.

The year saw great expansion in chemical research facilities in practically every country. One of the outstanding events in this connexion was the dedication of a veritable temple of research, the new home of the Mellon institute in Pittsburgh, Pa.

With the growing complexity of chemistry and with its development of new experimental and mathematical techniques, an increasing number of adequately trained workers in the subject is needed. The year 1937 gave every indication that the field of chemistry is as attractive as ever in the opportunities it offers. (F. C. WH.)

CHEMISTRY, APPLIED. The order in which advances in applied chemistry in 1937 are noted is not to be taken as signifying their relative importance. In most instances it is still too early to know which will ultimately prove of greatest significance.

The commercial development of high-vacuum molecular distillation, enabling the production of vitamin A concentrates from fish-liver oils and the application of the same process for the separation of many other substances was important. In addition to the high vacuum which can be maintained in modern welded apparatus, the separation of the heating and cooling surfaces of the mechanism with respect to the size of the molecules to be separated is a unique feature. There has been put into operation the first large-scale commercial unit practising electrolytic reduction of organic compounds. At present, tonnage quantities of hexahydric alcohols from glucose are being produced, and these products are important as raw materials in the production of vitamin C, beside having applications in the printing and textile industries. Research has overcome objectionable colour, heretofore a characteristic of sweet potato starch, and has also shown how sweet potatoes may be stored, with the result that in the United States a factory has begun commercial operations. The process offers a beneficial outlet for surplus or unmarketable sweet potatoes.

For many years the entire output of the world's only tantalum mine in Australia has been used by an American producer of this important metal. Improvements in methods for concentrating the ore have made it possible to use a considerable deposit in the Black Hills of South Dakota, and this is now being mined, concentrated, and used as an additional important source. A new plant began operations for the production of elementary phosphorus from phosphate by a new electrolytic process. This important element in highly purified form is being shipped in tank cars and becomes the starting-point for the manufacture of high-grade phosphoric acid and many compounds of this element. In Canada, the capacity of the plant-refining radium-bearing ore has been trebled. A new electrothermal process for refining magnesium is reported to yield this lightest of metals at a cost below that of aluminium. In Europe there has been a quickened interest in synthetic rubber-like materials. New types of buna rubber made in Germany were manufactured and the rate of production for 1938 has been set at 20,000 metric tons. In Italy, government subventions for the development of synthetic rubber were announced, as were similar plans in Czechoslovakia. In the United States, one of the synthetic rubber-like materials, neoprene, was produced to an amount of over 1,500,000lb., and another type available in several varieties, thiokol, was produced in increasing quantities.

Important developments in the utilization of cracking gases from petroleum and natural gas saw the commercial establishment of polymerization processes, whereby olefines yield polymers of petrol character, important for their high anti-knock value as well as a long step towards conservation of petroleum products. Iso-octane, heretofore relatively rare and used only as a standard for measuring anti-knock values, was produced in commercial quantities for aviation. The quantity produced in 1937 was about 2 million gals. Refinery gases as a source of acetone became a factor of serious disturbance in the acetone market, and new solvents produced from ethylene and similar hydrocarbons were placed upon the market. New processes for the recovery of carbon dioxide from the flue gases of power plants were put in operation with a view to increasing the output of dry ice, and other developments enabled the removal of sulphur dioxide from such gases, thus decreasing the pollution of the atmosphere and yielding elemental sulphur as a valuable product.

To the growing family of synthetic resins and plastics, 1937 saw added styrene, characterized by clarity, low initial colour, and thermoplastic properties, as well as improvements in the acrylic and metacrylic resins. Improved technique in the use of resins for large mouldings saw the material enter the field of large radio cabinets and lighting fixtures. New types of vinyl resins were developed, and a plant erected with a view primarily to improving safety glass, particularly as regards plasticity at very low temperatures. Various resins, especially those of the glyptal type, found more extensive use in lacquers and enamels, aided by additional improvements in pigments of the titanium type. (*See* also Plastic Industry, The).

Extensive experiments and tests demonstrated that a new type of rayon fibre retains its strength at the high temperatures developed in lorry and 'bus tires, giving it an advantage over most cotton cords. The mileage with such tires is very greatly increased over those usually employed. The same type of fibre with as many as 390 filaments per thread composed the 4,000sq.ft. quadrilateral jib of the *Ranger*, and was a factor in the success of that America's Cup defender. Ethyl cellulose made its appearance as a wrapping material. (*See* also Rayon.)

In Germany, following experiments with a pilot plant, a large commercial unit for the production of synthetic fatty acid was completed and put in operation. The output will be used solely for technical purposes, particularly in the manufacture of soaps, thereby conserving vegetable oils and fats. Advances were made in detergents which suppress the formation of insoluble calcium and magnesium salts, which are present in hard waters, and also of wetting agents which possess extraordinary penetrating, spreading, emulsifying, and wetting-out properties of importance wherever aqueous solutions are used, as in the textile industry. Encouraging progress was made in the effort to perfect insecticides and fungicides to replace lead and arsenate, objectionable in those instances where spray residues can be removed only with difficulty. The new materials come principally from the field of synthetic organic chemistry.

Research in the difficult field of vitamins and hormones has borne fruit in applied chemistry with the commercial synthetic production of vitamin B_1 and similar syntheses of certain hormones.

Translucent laminated plastic, readily formed and fabricated in any ordinary punch press, made its appearance for use in instrument dials and lighting fixtures. Success rewarded the efforts to use submerged moulds for the production of calcium gluconate and sorbitol with lactic acid and other materials ordinarily fermented in shallow pans. The use of a revolving drum for these moulds has made them as available for commercial processes as are yeasts and bacteria.

Chemistry has come to the aid of the textile industry in providing new fast colours and permanent water-repellent finishes for all types of cotton and linen fabrics, a new crush-proof process for rayon-pile velvets which are made resistant to spotting by the use of the water-repellent finish referred to above, new sizes, and the use of synthetic resins in textile finishing.

Turpentine is now dehydrated to remove the free water which caused rusting of containers and subsequent discoloration of turpentine. Fertilizers have been granulated to prevent caking in storage and improve drillability, and new compounds high in nitrogen and other elements and designed to be low in equivalent acidity have been manufactured.

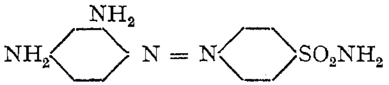
While there seems to be evidence that the list of new processes and materials introduced in a given year is shorter in times of relative prosperity than in depression, the contributions of 1937 are nevertheless in many instances notable. (*See* also Industrial Research; Synthetic Fuels and Lubricants, etc.) (H. E. H.)

CHEMOTHERAPY. Chemotherapy deals with those chemical compounds which exhibit a greater toxicity for specific parasites than for the tissues of the hosts in which such parasites are found. The evaluation of chemotherapeutic remedies depends on (1) the production of a series of chemical compounds; (2) a study of the pharmacology, toxicity, and therapeutic activity of these compounds in experimental infections in animals, with determinations of chemotherapeutic indices; and (3) investigations of the therapeutic activity and toxicity of these compounds in natural infections in man and in animals. It is obvious that such investigations must extend over considerable periods, especially with diseases of long duration, such as syphilis and sleeping sickness.

In the treatment of syphilis, a number of new ter- and quinquevalent arsenical compounds have been studied, but no important advances have been made. Among a homologous series of derivatives of *p*-aminophenylarsonic acids of the general formula $(HO)_2AsO.C_6H_4.NH.CO.(CH_2)_n.CO.NR_1R_2$, prepared by Morgan and Walton (1931), sodium succinanilomethylamide-*p*-arsonate ($n = 2$; $R_1 = H$; $R_2 = CH_3$) has been shown to have curative effects both in neurosyphilis and in primary and secondary syphilis.

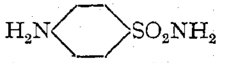
This compound ' neocryl ' has also been found effective in clearing up symptoms in African sleeping sickness (trypanosomiasis); it is as yet too early to determine whether it is superior to tryparsamide (Murgatroyd, 1937). Morgan and Walton (1937) have shown that trypanocidal action is enhanced by an amide group in the *p*-position in phenylarsonic acid. In 1935, Jancsó and Jancsó, and Schern and Artagaveytia-Allende, found that synthalin (decamethylenediguanidine) exerts a curative action on mice infected with various pathogenic trypanosomes. This observation has been confirmed by King, Lourie, and Yorke (1937), who have studied the action of a number of synthetic guanidine and related compounds, of which undecanediamidine appears to be the most active therapeutically in laboratory animals.

The most important chemotherapeutic advance during 1937 has involved the clinical exploitation of the discovery made by Domagk (1935) that azo-compounds containing the sulphonamide group ($-SO_2NH_2$) possess a curative action in streptococcal infections in mice and rabbits. The first compound prepared, 4-sulphonamido-2′: 4′-diaminoazobenzene (prontosil), was introduced in the form of a hydro-chloride: it is sparingly soluble in water and is given by mouth.



4-Sulphonamido-2′ : 4′-diaminoazobenzene
(Prontosil)

Tréfouël, Nitti, and Bovet (1935) showed that the essential part of the molecule is the benzene nucleus containing the sulphonamide group in the *para*-position to an amino group, and *p*-aminobenzenesulphonamide proved to be highly active against haemolytic streptococcal infections.



p-Aminobenzenesulphonamide
(Sulphanilamide)

Under the names ' sulphonamide-P ' and ' sulphanilamide ', this is now being extensively used. As might be expected, many derivatives of this simple substance have been made, of which a few have come into clinical use. These compounds have been successfully employed in the treatment of haemolytic streptococcal infections, particularly puerperal fever (of which the mortality has been reduced), chronic streptococcal lesions, and erysipelas. Infections due to *Streptococcus viridans* are relatively unaffected. In streptococcal meningitis, and to a less extent in meningococcal infections, good results have been obtained. Cures have also been reported in experimental animals and, to a limited extent in man, of pneumococcal infections, especially those of Type III, and of gas gangrene. In gonococcal and staphylococcal infections the results have been less satisfactory than in diseases due to the haemolytic streptococcus. A large number of other compounds have now been prepared which are highly active in laboratory animals infected with streptococci, pneumococci, gonococci, and staphylococci. These compounds await clinical trial. Their method of action is at present uncertain as they are very weak antiseptics, their action on the organisms is slight and growth only is delayed; the defence mechanism of the body is, however, unimpaired.

Arising out of this work Buttle, Stephenson, Smith, Dewing, and Foster (1937) in England have shown that in laboratory tests 4 : 4′-diaminodiphenylsulphone is a much more active streptococcicidal agent than sulphanilamide, but unfortunately more toxic. In France di-(*p*-acetylaminophenyl)-sulphone and 4-nitro-4′-aminodiphenylsulphide have been used with success in the treatment of gonorrhoea. Sulphanilamide and prontosil have also been employed in a few cases of infections of the urinary tract due to *Bacterium coli* and in one case of infection with *Bact. typhosum*. Toxic reactions have been described as a result of the use of these substances, more especially prontosil and sulphanilamide. Reactions are not common; the most frequent are nausea, vague abdominal discomfort, diarrhoea, headache, disorientation, choking or drunken feelings, acidosis, fever cyanosis, metheamoglobinaemia, and sulphaemoglobinaemia. Less common complications are acute haemolytic anaemia and anginal agranulocytosis. Some degree of polychromasia is almost always present, while excretion of porphyrins in the urine and faeces is increased. Optic neuritis has occurred, and skin rashes, either morbilliform or maculo-papular in type, and possibly due to photosensitization, have been recorded. Exfoliative dermatitis is rare.

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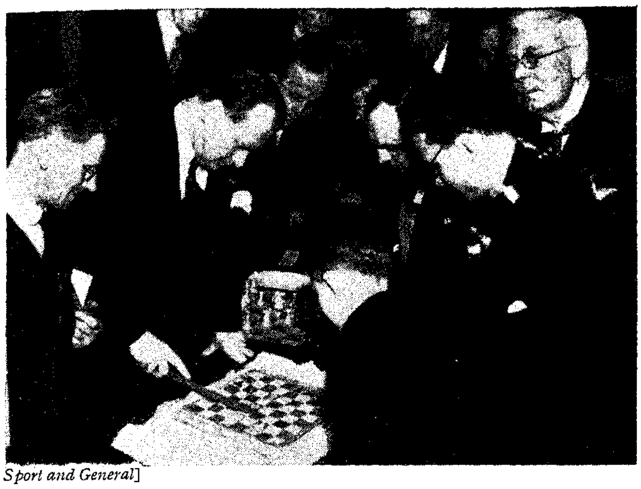
CHESS. The outstanding event of the year 1937 in the chess world was the recapture of the world championship title by Dr. Alexander Alekhine, the first occasion in the history of the championship when such a ' come-back ' has been made. Alekhine was champion from 1927—when he defeated Capablanca, the holder since 1921—until his defeat by Dr. Max Euwe in 1935; in 1937 he challenged Euwe, and the match took place in various towns in Holland between Oct. 5 and Dec. 16, 30 games being played, the winner to be he who first scored 15½ points. The following table shows the scores at intervals of five games:

GAMES	M. E.	A. A.	A. A.
1– 5	3	2	– 1
6–10	3½	6½	+ 3
11–15	6	9	+ 3
16–20	9	11	+ 2
21–25	9½	15½	+ 6
25–30	12½	17½	+ 5



Sport and General]

DR. ALEKHINE, CHESS CHAMPION OF THE WORLD, CUTS THE CAKE PRESENTED TO HIM AT HASTINGS, 1937

Alekhine won 11 games, Euwe 6, and 13 were drawn.

After the match Dr. Euwe announced that, if his subsequent tournament play warranted it, he might make an attempt on the title in four or five years. In August the International Chess Federation decided that Salo Flohr, of Czechoslovakia, would be the next challenger.

The following are the results of the more important international and other tournaments held during the year:

At Hastings (ended Jan. 6), Alekhine (France) attained first place with a score of 8 points out of a possible 9; Reuben Fine (U.S.A.) was second, and E. Eliskases (Austria) third. Others to be placed were, in this order: Dr. Vidmar (Yugoslavia), M. Feigin (Latvia), T. H. Tylor and W. Winter (Great Britain), G. Koltanowski (Belgium), Miss Menchik (Czechoslovakia), and Sir George Thomas (Great Britain).

At the third annual Easter Congress at Margate, first place was shared by P. Keres (Estonia) and R. Fine; Dr. Alekhine came second, and J. Foltys (Czechoslovakia) third.

The 30th congress of the British Chess Federation was held at Blackpool, July 5–16; the principal results were that the British championship fell to W. A. Fairhurst with 9 points, in succession to W. Winter, who did not defend the title; Sir G. A. Thomas was second with 8 points; Miss Dew became British women's champion, and the major open tournament was won by H. V. Mallison. At about the same time, an international tournament was held at Kemeri, Latvia, Great Britain not being represented. This resulted in a triple tie, Reshevsky (U.S.A.), Petrov (Latvia), and Flohr (Czechoslovakia) each winning 12 points, to the 11½ of Dr. Alekhine and Keres and the 11 of Steiner (Hungary). Later in the month the match between Miss Menchik and Miss Sonja Graf was held at Semmering, and was won by Miss Menchik by 11½ points to 4½, her challenger winning only two games.

The sixth international team tournament for the Hamilton-Russell Cup was held at Stockholm, July 31–Aug. 14; 19 countries took part, and for the fourth time in succession the cup went to the United States, their team consisting of R. Fine, I. Horowitz, I. Kashdan, F. J. Marshall, and S. Reshevsky. Hungary were second, and Poland and Argentine equal third; the British Empire finished thirteenth.

Miss Menchik retained her world women's championship, winning all her 14 games.

The last international meeting of the year was held at Semmering and Baden, near Vienna, Sept. 8–27, Dr. Euwe acting as umpire; the first prize went to Keres, of Estonia, with 9 out of a possible 14 points; Fine (U.S.A.) was second with 8, and Capablanca (Cuba) and Reshevsky (U.S.A.) tied for third with 7½. At the Hastings Congress that opened on Dec. 28, Reshevsky won first prize in the premier tournament, Keres and C. H. O'D. Alexander were bracketed second, and Flohr and Fine fourth.

Cambridge won the annual inter-varsity match, the score now standing at Cambridge 28, Oxford 25, and 8 drawn. The annual match between the London Stock Exchange and the Amsterdam Bourse was won by London for the fourth time in succession, London thus becoming the absolute owners of the cup. Sir George Thomas, for the fifteenth time, won the City of London's Chess Club championship. A remarkable feat was performed at Edinburgh in September by G. Koltanowski, who played 34 games simultaneously blindfold, winning 24 and drawing the rest; this beat the previous record for blindfold simultaneous play, held by Alekhine with 32 games.

Finally, we have to record, with deep regret, the loss to the chess world of Edward Samuel Tinsley, who died suddenly while attending the Worcester Congress in September. For over 30 years chess correspondent of the London *Times*, he was widely known and greatly respected by professionals and amateurs alike. (L. H. D.)

CHIANG KAI-SHEK (1866–), Chinese general and political leader, a native of Ningpo, Chekiang province. Joining the Kuomintang at an early age, Chiang Kai-shek became head of the Whampoa Military Academy under the nationalist regime headed by Dr. Sun Yat-sen in Canton, in 1920. He first came into nation-wide prominence as the outstanding leader of the advance of the nationalist forces from Canton to the Yangtze valley in 1926–27.

After the capture of Shanghai and Nanking in the spring of 1927, Chiang broke off relations with the Communists, who had hitherto been co-operating with the Kuomintang, suppressed them in the territory under his control, and

Wide World Photos]

CHIANG KAI-SHEK WITH MADAME CHIANG

gave a socially more conservative turn to the entire nationalist movement. In the summer of 1927, he married Miss Mayling Soong, sister of the well-known financier, T. V. Soong. Especially during recent years, Mme Chiang Kai-shek has been closely associated with her husband's arduous administrative tasks. Since 1927, Chiang Kai-shek has been China's national leader. He has several times assumed and resigned the post of premier in the nationalist government; but he has always remained generalissimo of the Chinese armed forces, so far as these were subject to central government control. Chiang Kai-shek was detained for two weeks in Dec. 1936 by his subordinates, Marshal Chang Hsueh-liang and General Yang Hu-cheng. Personal and political grievances were mingled in this attempted *coup d'état,* which ended with the release of Chiang and the retirement of the generals who had detained him. After this incident, however, Chiang was apparently won over to the idea of a more conciliatory attitude towards the Chinese Communists, who, in turn, displayed readiness to renounce their more extreme ideals of social revolution and to co-operate again with the Kuomintang and the nationalist government. Chiang Kai-shek faced the supreme crisis of his career when the initial clash at Lukowkiao, near Peiping, developed by successive stages into a major war between Japan and China (*see* SINO-JAPANESE WAR). Despite the military reverses which by the end of the year had led to Japanese occupation of most Chinese territory north of the Yellow river and of the Shanghai-Nanking area, Chiang Kai-shek gave no indication of a desire to sue for peace, remaining faithful to a statement which he made at the beginning of hostilities: 'Let us realize that, once war has begun, there is no looking backward, we must fight to the bitter end'. (W. H. CH.)

CHICAGO, an American city, the port of entry and county seat of Cook county, Ill., is situated at the south-west corner of Lake Michigan. It is the second city of the United States in population, manufactures, and volume of trade. It is the largest centre of rail traffic and of air traffic, and is a port for a great tonnage conveyed by lake ships, principally bulk cargoes of iron ores, fuel, and blast furnace flux. It has access by the Illinois waterway to the inland navigation routes of the Mississippi valley. Small steamers make direct ocean voyages to and from Chicago via the St. Lawrence river and the Welland canal.

Chicago's population in 1937 was set at 3,632,701 by the U.S. Census Bureau in an estimate announced Dec. 3. This represents a gain of 256,263 since the decennial census of 1930, when there were 3,376,438 inhabitants in the city proper (area 201·90sq.m.) and 4,364,755 in the entire metropolitan district with an area of 1,119·29sq.m. The recent estimate suggests that Chicago has more than regained a loss of 117,920 indicated by a quasi-official check in 1934 to determine the effects of the economic depression.

By the close of 1937, lack of adequate housing was felt, but construction declined in the latter part of the year after a slight gain in earlier months. The city still labours under the handicap of an antiquated building code, amendment of which has been long promised but not yet made by the city council.

Most of 1937 may be described as uneventful and prosperous by Chicago standards. Although 85,000 families were in receipt of direct relief and close upon 100,000 were at times employed upon Federal Works Progress Administration projects, the city's manufacturing establishments early in the year approached capacity output. In 1935, year of the last Federal business census, they employed 318,718 persons, paid $368,020,000 in wages, and sold goods valued at $2,379,773,000.

For 75 years a storm centre of the labour movement in the United States, Chicago, except for its outlying steel communities, enjoyed comparative calm in 1937 while nearby areas were scenes of widespread strikes. Most of the city's trades, already organized under the American Federation of Labor, remained calm, differences being settled by negotiation. A strike of taxi-drivers brought the only considerable violence in the downtown parts of Chicago, but there were no fatalities. Just within the city's south-eastern border, however, on May 30 occurred a sanguinary conflict between strikers organized by the Committee for Industrial Organization and Chicago police near the gates of the plant of the Republic Steel Corporation. Ten strikers were slain by police gunfire. A coroner's jury pronounced the cases to be justifiable homicide, finding that the police fired in self-defence. A U.S. Senate committee and a 'Citizens Emergency Committee on Industrial Relations' arrived at contrary conclusions. The cases were closed Dec. 21, when 61 rioters were dismissed with trifling fines.

Chicago's perennial struggle with crime resulted in substantial improvement in 1937. The annual report of State Attorney Thomas J. Courtney showed that 1,176 defendants were sent to the State prison, and 464 to the county gaol or city bridewell during the year. Probation was given to 329 offenders. Convictions were obtained in 89 per cent. of cases against gunmen and burglars, and in 94 per cent. of cases of automobile theft, a class of crime which has been reduced to its all-time low record in Chicago.

The city celebrated the centennial anniversary of its charter as a city by the State of Illinois by a series of pageants beginning March 4 called the Charter Jubilee. The year's gala occasion was the formal opening of the Outer Drive bridge near the mouth of the Chicago river. This project, begun in 1931, had been interrupted by the economic depression. Work was resumed in 1935 with the aid of Federal grants amounting to $2,330,181. The entire cost of the works was $12,300,000. Completion of the bridge gave to Chicago a new boulevard from the northern to the southern parts of the city along the shore line of Lake Michigan, and obviated the necessity of motor traffic passing through the 'Loop', central business district. Mr. Franklin D. Roosevelt was the principal speaker at the opening ceremonies on Oct. 5, delivering an address on world affairs which led to the calling of the Nine-Power Conference at Brussels to consider Far Eastern affairs.

Work was begun and two-thirds completed on a lock at the mouth of the Chicago river to prevent storm water in the city from reversing the river's flow and emptying sewers into the lake, from which the city's drinking-water is obtained. This project is in anticipation of the reduction of the city's diversion of water from Lake Michigan on Jan. 1, 1939, to 1,500cu.ft. per second from the present 5,000cu.ft. per second. The control lock is part of a programme involving the re-routing of the city's sewers to newly erected disposal works. This immense undertaking, involving expenditure of $60 millions and the building of 73m. of intercepting sewers, was approaching completion at the end of 1937. The budget of the muncipality of Chicago for 1937 aggregated $131,876,630 and the tentative budget for 1938 has been set at $147,750,159.

CHILD LABOUR. This is a matter which continues to engage attention in many countries. The year's activities in Great Britain and the United States are here considered.

The *Ministry of Labour Gazette* for Nov. 1937 gives the estimated number of insured boys and girls under 16 years of age employed in Great Britain in occupations other than agriculture as 501,200 boys and 412,800 girls. Of this number 231,120 are employed in the distributive trades alone, 93,822 in the textile trades, and 32,700 in mining. A recent report of a departmental committee on children in unregulated occupations estimates 125,000 in such occupations. The number of working boys and girls under 16 years of age seems to be at least five times as large in Great Britain as in the United States. The causes of this difference may be found in the fact that most children in Great Britain leave school when the legal age is reached, while in the United States very large numbers remain in school beyond the legal working age, and in the fact that the legal minimum age is now two years higher in the more important industrial States of the United States than in Great Britain.

England placed upon the statute books after prolonged debate the new Factories Act, reducing the maximum weekly working hours for children under 16 years of age from 48 to 44. Unsuccessful efforts were made in both Houses of Parliament to raise the minimum age for employment to 15 and to reduce working hours of minors under 18 to 40 a week. The Education Bill for Scotland, passed by Parliament, raised the school-leaving age in Scotland from 14 to 15 years, with exemptions for ' beneficial ' employment for children 14 years old, as did the Education Act of 1936 for England, the effective date for both acts being Sept. 1, 1939. In Norway also a new labour law, effective Jan. 1, 1937, raised the minimum age for employment from 14 to 15 years, and prohibited employment of persons over 15 years who are still required to attend school.

United States.—In 1937, two States, North and South Carolina, passed laws fixing, with some limitations, 16 as the general minimum age for employment. With these, ten States have now established by law 16 as the age for employment: Ohio and Montana more than twenty years ago, Wisconsin and Utah in 1933, Connecticut and Pennsylvania in 1935, Rhode Island and New York in 1936. In all these States except Rhode Island the legal minimum age had been 14. There has been no addition in recent years to the very small group—California, Maine, Michigan, and Texas—which have for some years had a 15-year minimum age.

The movement for a Federal child labour law also gained great momentum in 1937. Two quite different proposals were before Congress. Senator Wheeler's Bill, introduced in the spring of 1937, followed the method utilized for excluding prison-made goods from a State, recently held constitutional by the Supreme Court. Under this proposal, Congress would authorize a State to exclude goods produced by children in violation of its own child labour standards. A second approach has been the prohibition of the shipment of the products of child labour in inter-State commerce, the decision of the Supreme Court in the Wagner Labor Relations Act having led to the belief that such a law might now be sustained.

The proposed amendment to the Constitution of the United States, authorizing Congress to limit, regulate, and prohibit the labour of persons under 18 years of age was submitted by Congress to the States for ratification in 1924. The amendment met with so much opposition in the States that by 1930 only five States had ratified it. By 1936, twenty-six States had ratified. Two additional States, Kansas and Kentucky, were added to the list in 1937.

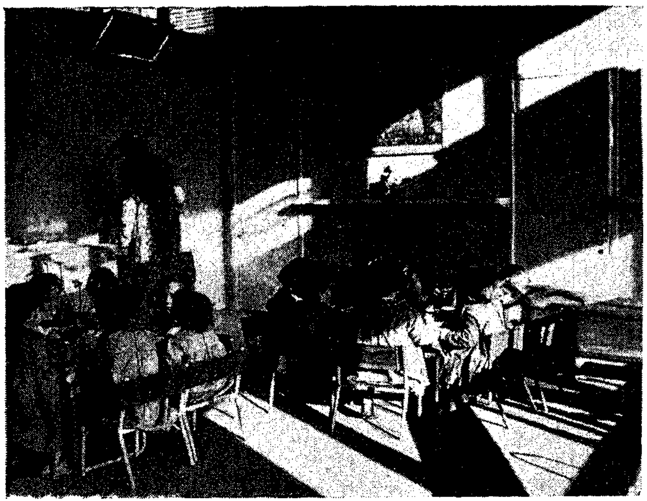
In the spring of 1937, Senator Vandenberg of Michigan introduced a joint resolution proposing an amendment which would ' empower Congress ' to limit and prohibit the employment for hire of persons under 16 years, ' and require ratification within a seven-year period '. While 16 is the minimum age now sought for general employment, the 18-year minimum has been urged for the extremely hazardous occupations, and supporters of the original amendment are opposing the Vandenberg proposal. Although reported favourably by the Senate Judiciary Committee, it did not come to a vote in 1937.

Current figures are not available for the nation as a whole as to changes in the number of working children under 16 years of age. The last census (1930) showed less than 200,000 employed in non-agricultural occupations and more than 400,000 in agriculture. The numbers in manufacturing occupations have decreased greatly since 1930, especially during the period the N.R.A. was in effect; but after that Act was declared unconstitutional in May 1935, the numbers increased where new legal standards have not been adopted. The number of first working papers issued to boys and girls of 14 and 15 in the States reporting to the Children's Bureau showed a decline from 10,244 in the first six months in 1936 to 4,899 in 1937. If, however, only the States which have not adopted the 16-year minimum age are considered, there was an increase during these months in 1937 of 19 per cent. as compared with 1936. (G. AB.)

CHILDREN'S BOOKS. A large number of excellent books for children, written by all kinds of people, from professors in the older universities to school-girls, appeared in England in 1937. It is possible to mention only a few of them here.

Arthur Ransome, who made his fame some years back with *Swallows and Amazons*, continues to be the most popular author among intelligent boys and girls from 10 to 18. In 1937 he gave them *We Didn't Mean to go to Sea*, a story of adventure delightfully illustrated by himself with pictures of sailing and sailing boats. Two of the kind of children for whom, or about whom, Mr. Ransome writes have been inspired to make a book themselves. But *Far Distant Oxus*, by Katharine Hull and Pamela Whitlock, is not a mere imitation; story and pictures are full of originality, and they are put together with a skill that many older authors might envy.

Some publishers are trying to replace the unreal ' adventure stories ' once current by well-informed books about exciting deeds in many continents. The best example is perhaps *Carmen, Silent Partner*, by Chesley Kahmann, but other volumes in the same series are almost as good. The most attractive historical story book for children in 1937 was Carola Oman's *Robin Hood*. It is taken from the fourteenth-century *Lytell Geste*, and shows scholarly care, without any pedagogic heaviness to spoil the inimitable tales. An admirable story about the religious life of children in its relation to their daily life has been written from the Roman Catholic standpoint by Cecily Hallack, *Adventure of the Amethyst*. Good stories about modern middle-class children are: *John and Mary Abroad*, by Grace James, for children of six and seven; *Jane Versus Jonathan*, by Vera Barclay, for children of 10 to 12, and *Jam To-morrow*, by Monica Redlich, for those of 12 and upwards. *The Family from One End Street*, by Eve Barnett, is a cheerful story about some very poor children.



Gas Light & Coke Co.]

LUNCH TIME IN PLEASANT SURROUNDINGS IN THE NURSERY SCHOOL, KENSAL HOUSE

Fox Photos]

ARTIFICIAL SUNSHINE TREATMENT FOR BABIES AT THE NEW MIRIAM PRICE COLEMAN DAY NURSERY, ISLINGTON

Eleanor Farjeon remains supreme in her own line of fairy stories. *Martin Pippin in the Daisy Field* is a delicious poetic fantasy about village children and elves and the Sussex countryside. Olive Dehn's *Tales of the Taurus Mountains* have the classic fairy-tale atmosphere. *The Magic Poodle*, by B. G. and I. G. Williamson, and *Worzel Gummidge Again*, by Barbara Euphan Todd, are amusingly delightful tales about ordinary children's adventures with fairy characters in natural country surroundings. *From Seven to Eight*, by M. T. Candler, is an attractive book of the same type for younger children. Among many excellent books of short stories, the most witty and engaging is Prof. J. B. S. Haldane's *My Friend Mr. Leakey*. Among many clever picture books, the best is perhaps *Lucy Brown and Mr. Grimes*, by Edward Ardizzone. The children's book which seems to have given the greatest delight to people of all ages in 1937 is, however, Prof. Tolkien's fascinating tale, *The Hobbit*, which leads one far away into lands of imaginative enchantment. (I. B. O'M.)

United States.—Publications during 1937 showed a wide variety in content and format, and an emphasis on fiction for older girls and fewer stories of adventure for boys. Picture books and others for younger children predominated. Production as a whole indicated greater recognition of the illustrator as contributor and closer co-operation between writer and artist.

Among picture books distinguished for text, illustration, and design were *Animals of the Bible*, brief selections from the King James version with full-page lithograph drawings in black and white by Dorothy Lathrop, *Shawneen and the Gander* by Richard Bennett, *Walter the Lazy Mouse* by Marjorie Flack, and *Four and Twenty Blackbirds*, nursery rhymes collected by Helen Dean Fish and illustrated by Robert Lawson.

Outstanding fiction included *Vinny Applegay* by Ethel Parton, *Petite Suzanne* by Marguerite de Angeli, *When Guns Thundered at Tripoli* by Charles Finger, and *Trader's Children* by Laura Armer.

In the fields of folklore and legend were *The White Stag* by Kate Seredy, *Seven Simeons*, a Russian tale retold and pictured by Boris Artzabasheff, and *Swords in the Dawn*, a fictionized version of the Hengist and Horsa epic by John O. Beaty.

History and biography were represented by *No Other White Men* by Julia Davis, *Mediaeval Days and Ways* by Gertrude Hartman, *The Lost Queen of Egypt* by Lucile Morrison, and *The Boy Shelley* by Laura Benet.

This Year : Next Year by Walter de la Mare and Harold Jones was the only important contribution to children's poetry. May Lamberton Becker's *First Adventures in Reading* (1936) was brought out in slightly revised form in England with the title *Choosing Books for Children*. Books on science, hobbies, and the arts were well represented.

Events of the year were the award of the John Newbery Medal, by the section for library work with children of the American Library Association, to Ruth Sawyer for her *Roller Skates*, as the most distinguished contribution to American children's literature during 1936 ; the award by the English Library Association of a Carnegie Medal to Arthur Ransome for his *Pigeon Post* as the outstanding juvenile publication in England ; and the gift by Frederick Melcher, the donor of the John Newbery Medal, of a Caldecott Medal to be awarded annually for the most distinguished American picture book. An important change in the Library of Congress, Washington, D.C., was the assembling in the rare book room of approximately 7,000 children's books published prior to 1850.

Important bibliographies were *Children's Books from Foreign Languages*, a list of English translations prepared by Ruth A. Hill and Elsa de Bondeli, and *The History of Children's Literature, a Syllabus with Selected Bibliographies* by Elva S. Smith.

Book fairs at which children's books were emphasized were held in London, Montreal, Toronto, New York, Boston, and elsewhere. Books for children were a part of several of the national exhibits at the Paris Exhibition. The total juvenile publications in 1937 (not including pamphlets, text books, and new editions) were : United States, 853; England, 916 (including 11 translations). Many books of the year were published in both countries, simultaneously or at close intervals.

CHILD WELFARE. The year 1937 witnessed notable developments in child welfare in many countries, particularly regulation of child labour (*q.v.*), protection of maternal and child health, and development of public administration of services for maternal and child health and child welfare.

The maternal mortality rate for 1935 was lower than that for 1934 in Australia, Canada, Chile, Czechoslovakia, England and Wales, Estonia, the Netherlands, New Zealand, Northern Ireland, Switzerland, and the United States. The lowest maternal death rates were those of the Netherlands and Italy—30 per 10,000 live births. The maternal mortality rate of the United States—58 per 10,000 live births—was the lowest ever recorded for that country, but it was higher than that of any of the other countries mentioned above. A national conference to consider ways of improving maternal and infant care was called by the chief of the United States Children's Bureau to meet Jan. 17–18, 1938. The infant mortality rate for 1935 was lower in Australia, Canada, Chile, Czechoslovakia, England and Wales, Latvia, Lithuania, the Netherlands, Scotland, and the United States. The rate for New Zealand—32 per 10,000 live births—remained unchanged, and was lower than that of any of these countries.

Considerable interest was manifested in child adoption and care of dependent children. A subcommittee of the advisory committee on social questions of the League of Nations continued work on a report on the placing of children in families, which is to have final consideration at a session in 1938. In England, the departmental committee set up in Jan. 1936 to investigate the methods pursued by adoption societies or other agencies engaged in arranging for the adoption of children presented a report proposing that all agencies concerned with adoption be licensed by the local authorities. Under the Adoption of Children Act, orders for adoption rose from 2,943 in 1927 to 5,180 in 1936.

In the United States, the Children's Bureau completed field work in the study of adoptions in 11 States. In connexion with this study, statistical analysis was undertaken for about 2,000 adoption petitions.

A number of countries set up national child-welfare agencies in 1937. Argentina created a Bureau of Maternal and Child Welfare by a law passed Dec. 31, 1936. Denmark, on May 22, 1937, enacted legitimacy and maintenance laws replacing earlier statutes. In Finland, by a law effective on Jan. 1, 1937, child-welfare work was reorganized under the general direction of a single agency. This was the first general child-welfare law enacted since Finland became independent. France, by presidential decree dated Sept. 30, 1937, set up a High Council for Child Welfare with the minister of public health as chairman. In Mexico, a presidential decree, effective on July 1, 1937, established a Department of Social Aid to Children, to be in charge of health work for mothers and pre-school children and to supervise all agencies, public and private, national, State, and local. Sweden, by laws to become effective Jan. 1, 1938, provided for nation-wide maternal and child-health services and for government aid to mothers during pregnancy and at childbirth, to unmarried mothers, to orphans, and to children whose parents are incapacitated for work. The newly created child-welfare agency of Venezuela made definite plans in 1937 for the first national child-welfare congress, to be held in Caracas in 1938.

The United States Children's Bureau, first public agency in the world created to consider as a whole the welfare of children, celebrated its twenty-fifth anniversary in 1937. It was also the first calendar year during which the States and the Federal Government, through Federal grants-in-aid administered by the Children's Bureau, co-operated under the Social Security Act in the development of services for maternal and child health, crippled children, and child welfare. Marked progress was made in most of the States in the operation of all three programmes. Several States passed laws establishing or reorganizing State departments of welfare, with a trend towards unifying such services as public assistance, relief, and child welfare. Many States clarified and strengthened the legal basis for co-operation with the Children's Bureau in services for maternal and child health, crippled children, and child welfare, as well as with the Social Security Board in aid of dependent children.

(K. F. L.)

The most curious feature of child-welfare legislation and practice in Britain is a gap in facilities for children between the ages of two and five. The Ministry of Health is now trying to bridge this gap by encouraging local authorities to provide clinics for children up to school-entrance age, which is usually five.

Apart from expenditure under the Education Acts, which amounts to £100 millions a year in England and Wales for approximately 6,929,000 children, and £15 millions in Scotland for 1 million children, the heaviest expenditure of public funds is on maternity and child-welfare work.

At the beginning of 1937 there were 2,238 infant welfare centres in England provided and maintained by local authorities, and 813 provided and maintained by voluntary associations. Every year 330,000 children under one year old attend these centres. This represents 60 per cent. of the notified live births in each year.

This maternity and infant welfare service costs more than £3,500,000 annually, partly subscribed from local rates, but mainly from central government grants.

In addition to the baby centres, there are special children's hospitals. At the beginning of 1937 there were 24 hospitals with 426 beds provided by local authorities, and 58 institutions with 1,089 beds belonging to local authorities, but subsidized by public funds.

The day-nursery movement, designed to care for the children of working mothers, is still in its infancy. At the beginning of 1937 there were 21 local authorities' day-nurseries, with places for 1,014 children under the age of five, and 85 nurseries, with places for 3,201 children, provided by voluntary associations.

The local authorities also employ 13,000 ' foster parents ' for the care of children whose parents are forced by poverty to enter public institutions.

Public funds are also provided to aid the emigration of children overseas, but in recent years there has been a considerable falling off in this service, the number assisted in 1936 being only 116, including 11 orphan or deserted children.

One of the most interesting developments in child welfare in Britain in recent years has been the increased provision of medical and dental services, and of meals and milk.

For the past three years approximately 150,000 children were provided annually with free solid meals in British public elementary schools. The total number of meals, including milk meals, was 87 million in 1936. Milk meals accounted for only 63,700,000 of this total. In addition, milk is provided free or for reduced payment to 2,400,000 children a month.

No official figures are provided showing the numbers affected or the funds involved in voluntary welfare work. More than half this work is concentrated in London, particularly in the East End of the City, and includes provision for holiday camps and day visits to the seaside. It is estimated that voluntary funds totalling £2 millions are spent annually in London for these purposes. Outside all these agencies is the National Society for the Prevention of Cruelty to Children, whose last annual report (Aug. 1937) showed that during the year the number of cases dealt with was 46,003, the highest annual total since the World War. Most of the increase lay in the number of cases where parents came voluntarily to seek the advice of the society. Although cases of neglect and other wrongs had increased, those of ill-treatment and assault have decreased for the first time in eight years.

There is a growing movement in Great Britain, led by the National Association of Schoolmasters, for a new 'children's charter', which should have for its concern the welfare under State auspices of all children and young people from infancy until they reach the age of 18.

CHILE, a republic on the west coast of southern South America; language, Spanish; capital, Santiago; president, Arturo Alessandri; area, 289,776sq.m. The population was officially estimated at 4,552,136 in 1936. Chile has more Northern European elements in its population than any other Hispanic American country, with German-Chileans preponderant in some sections. The chief cities are: Santiago (827,910) and Valparaiso, the chief port (200,000).

History.—The government is administered by a president and a cabinet which is partly under control of the congress. The year 1937 was marked by political instability, as the moderately rightist government of President Alessandri maintained itself with increasing difficulty against the growing dissatisfaction of left wing groups. The Conservatives and Liberals supported the president in congress and furnished a majority of the cabinet. The so-called National Popular Front, linked with Communists on the one hand and Nazis (' Nacistas ') on the other, formed the opposition, while the disunited ' middle of the road ' radicals held the balance of power, with some favouring co-operation with the president, and some an accord with the left.

The congressional elections, which were held on March 8 without major disorder, resulted generally in victory for the government parties, although 3 Nazis and 7 Communists gained seats, but the political tranquillity expected to follow the elections failed to materialize. Two days after the elections, Gustavo Ross, foreign minister and minister of finance, and outstanding leader of the rightist groups, resigned. He was accused of fostering a food shortage through his policy of encouraging exports to the United States, thus favouring the agriculturists and capitalists and sacrificing the interests of labour. To meet the food shortage, the government adopted various measures to lower prices. By May increasing Nazi activity became of serious concern to the government. Many Nazis were arrested when tear-gas bombs were thrown at President Alessandri on May 21, and frequent Nazi clashes with the police occurred throughout the year, with a number of fatalities. To meet the Nazi threat the minister of the interior banned all mass meetings and the wearing of uniforms and insignia denoting group affiliation. In August, congress was plunged into bitter debate when charges were made concerning German Nazi influences in Valdivia, centre of a considerable population of German extraction. A visit by the minister of labour, Bernardo Leighton, to Valdivia brought denials from German educational institutions there that their educational policies were contrary to Chilean interest.

Towards the end of the year, the forthcoming presidential elections of 1938 began to dominate the political scene. A Socialist candidate, Colonel Marmaduke Grove, nominated by the Popular Front, was expected to bring about a liberal-radical coalition, while Gustavo Ross was considered the probable choice of the parties of the Right. A former president-dictator, Carlos Ibáñez, announced Nazi support for his own candidacy and urged a programme of social reform which would eliminate foreign economic imperialism.

In foreign relations the most outstanding development was a treaty with Bolivia in August, after months of conferences between economic experts of both nations. Earlier in the year a Chilean commission visited Japan at the expense of the Japanese Government to consider direct steamship service between Japan and Chile, and the development of an export trade to Japan of nitrate fertilizers, copper, and farm products, in return for Japanese merchandise. To counteract the fear expressed in some quarters that Argentina was ambitious to seize Chilean territory, a heavy outlay for rapid naval improvement and for the purchase of military aeroplanes was begun. To defray these costs, for which no previous provision had been made, the sale of State lands was proposed.

Trade and Communications.—Chile has direct shipping connexions with other parts of America and with Europe, and regular, frequent air transport service north to Panama and New York, and east to Buenos Aires. Railways connect the country with Bolivia and with Argentina. The main route to Argentina, the trans-Andean, has been closed to freight traffic since 1934, because of landslide damage, but funds for its reopening were authorized by the Argentine Government in 1937. Resumption of complete service is expected by late 1938. Within the country there is a railway system of approximately 5,540m. and a 2,300m. highway network. A road programme adopted in 1936 provides for the expenditure of 135 million pesos on road development from 1937 to 1940, with emphasis on the vicinity of Santiago and on the southern provinces of the country. Communication with the far north and the far south is by ship and aeroplane.

In 1936, foreign trade showed a definite improvement which was, however, completely eclipsed by the gains of the first half of 1937. In 1936, the total trade was 23 per cent. of that of 1929; in the first half of 1937 it reached 43 per cent. of the comparable 1929 figures. Imports (1936) were 346,700,000 pesos (84 per cent. manufactured articles), with Germany (29 per cent.), the United States (25 per cent.), and Great Britain (13 per cent.) leading. In the first half of 1937, despite a 2 per cent. increase in total volume, imports from Germany were less than 1 per cent. greater and those from Great Britain approximately 8 per cent. less, while imports from the United States had increased 24 per cent., putting that country in the lead. Exports in 1936 were valued at 548,800,000 pesos, to the United States (17 per cent.), Great Britain (16 per cent.), and Germany (16 per cent.). The first half of 1937 showed a 91 per cent. increase over the corresponding period in 1936, with the chief gains to the United States. Mineral products comprised 75 per cent. of the 1936 exports, with copper (38·8 per cent.), nitrates (29 per cent.), iron-ore, coal, and gold the chief items. Total value of mineral products exported in the first half of 1937 was approximately 110 per cent. greater, with the greatest increase in copper. Non-mineral exports are: wool and frozen meats, and miscellaneous agricultural products, especially wine and cereals.

Agriculture, Manufacturing, and Minerals.—Mineral production is principally copper and nitrates, with totals dependent upon foreign demands and consequently shifting greatly from year to year. In the first half of 1937, production reached its highest since 1929. Agriculture is the chief industry, with its products consumed largely within the country. Second in importance is manufacturing (almost entirely for domestic consumption), which employs 23·8 per cent. of the industrial population. Textiles are the principal manufactured product, with cement and electric power next. Considerable advance has been made within recent years. Livestock, principally sheep for wool and for meat, is important in the south. Tourist trade possibilities are just beginning to be developed in Chile. The southern Andean and lake region, ' the South American Alps ', offer great possibilities for winter sport resorts.

Finances.—The monetary unit is the peso (value approx. 2*d*.). The national budget for 1937 was £14,890,654.

Education.—Primary education is free, non-sectarian, and compulsory. In 1935 there were 4,345 primary schools (enrolment, 542,338), and 230 secondary (enrolment, 41,893). The 1937 budget allotted approximately 16 per cent. to education. The national university of Chile, the Catholic university at Santiago, and the university of Concepción at Concepción, are important.

Army and Navy.—Chile has obligatory military service, with a peacetime army of 21,000. The navy has declined of recent years, but a strong ' big navy ' movement was under way in 1937.

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CHINA, a republic in East Asia, bounded on the north-east by Manchukuo, on the north and west by Outer Mongolia, Kazakhstan, Kirghizstan, Tajikstan, Kashmir, and Tibet, on the south by India, Burma, and French Indo-China, on the east by the Pacific ocean. Capital, Nanking (temporarily removed to Chungking) ; president, Lin Sen. Excluding those areas over which no effective Chinese sovereignty has been exercised for many years (Manchukuo, Outer Mongolia, Tibet), China has an area of 2,845,740sq. m. and a population of 418,479,000 (estimate of directorate of statistics in Nanking). No comprehensive census has ever been taken. Population of larger cities: Nanking (est. 1937), 1,000,000; Shanghai (foreign and Chinese administrative areas reckoned together, census of 1935), 3,490,762 ; Peiping, 1,487,289 ; Canton, 861,024 ; Hankow, 777,993 ; Tsingtao, 440,135. There are about 185,000 foreigners in China, including 74,000 Japanese, 64,500 Russians, 13,344 British, 8,637 Americans, and 3,444 Germans.

History. (For the Sino-Japanese War, *see* that heading).—The ancient Imperial regime in China was overthrown by revolution in 1912 and a republic was proclaimed on Feb. 12, 1912. Experiments in western parliamentarism were not successful, and actual power over various parts of the country drifted more and more into the hands of generals, such as Wu Pei-fu, Chang Tso-Lin, Feng Yu-hsiang, and others. A new phase of China's history began when the capital was set up at Nanking after the campaigns of the period 1926–28 had established the Kuomintang (National People's Party) as the dominant political organization of the country and Chiang Kai-shek (*q.v.*) as its outstanding personality.

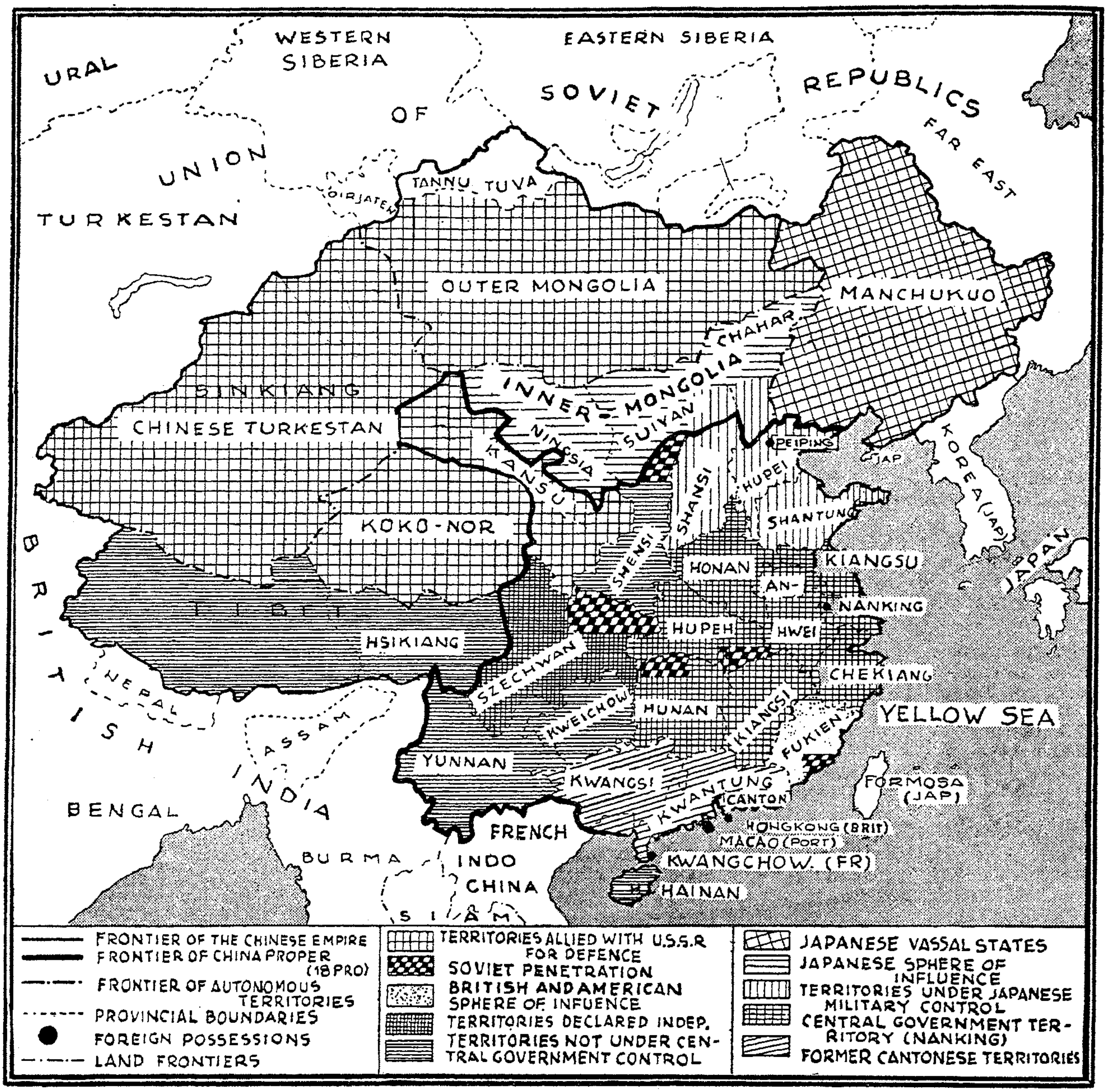
The Kuomintang is the sole legal political party in China, and the national government derives its authority from the Kuomintang. There are no general elections ; and the nearest approach to a representative body in China is the annual plenary session of the Kuomintang central executive committee and central supervisory committee. The government is composed of five yuans or departments, the functions of which are indicated by their titles : the executive, legislative, judicial, examination, and control yuans. The executive yuan exercises general supervision over the ministries and commissions, and its president is really the acting head of the government. The president of the national government possesses only titular powers. The legislative and judicial yuans are concerned respectively with the drafting of laws and the administration of justice. The examination yuan is in charge of government personnel matters, and the control yuan exercises functions of general supervision and auditing. There is also a cabinet of ministers. The leading figure in the national government throughout the last decade has been Marshal Chiang Kai-shek.

Trade and Communications.—China's imports amounted to 941,545,000 Chinese dollars and exports to 705,741,000 dollars in 1936. Exports were stimulated by the abandonment of the silver basis of the currency in 1935 and the depreciation of the Chinese dollar, which has since then been maintained at a rate close to 1*s*. 3*d*. During the first eight months of 1937, imports were 785,620,291 dollars and exports 616,863,859 dollars, both showing an improvement over the preceding year. After August, however, there was a heavy decline in China's foreign trade as a result of the widespread hostilities with Japan. Imports through Shanghai, for instance, declined from 77,645,229 dollars in July to 28,162,294 dollars in August and to 7,319,714 dollars in September. Exports from the same port fell off from 52,890,654 dollars in July to 23,756,935 dollars in August. China's main exports are eggs and egg products, silk, cotton, wood-oil, ground-nuts, seeds of various kinds, tea, and various ores and metals, including wolfram and antimony. Its main imports are metals, machinery, chemicals, dyes and paints, petroleum, and tobacco.

China had between 6,000 and 7,000m. of railways at the end of 1936, and a five-year plan for the construction of 5,300 additional miles after 1936. Highway construction, which had increased substantially during recent years, reached the figure of 56,000m. in 1935. According to a report of the ministry of communications in 1931, China had 2,986 registered ships, with a tonnage of 431,892. China has no trans-oceanic shipping lines, and much of the coastal shipping is in the hands of British and Japanese firms. A total of 87,755 ocean vessels entered and cleared at Chinese ports in 1936. British ships represented 16 million tons ; Japanese 9,500,000, and Chinese 7,300,000. The government telephone system in 1935 served 21 cities, and 62 others were served by private and provincial systems. About 250,000 telephones were in use. China has 53,000m. of telegraph lines and several high-power radio installations.

The chief cities of China are linked up by air routes, which often serve as a substitute for non-existent rail connexions. Commercial aviation is in the hands of the Sino-American China National Aviation Corporation and the Sino-German Eurasia Aviation Corporation. The aeroplanes of the former flew 1,955,801km. and carried 10,404 passengers ; while the latter carried 2,951 passengers and flew a distance of 744,735km.

Agriculture, Manufactures, and Mining.—China is an overwhelmingly agricultural country, and is predominantly a land of small-scale farming. As many as 36 per cent. of its farms are less than 1·5 acres in size, while 62 per cent. are less than 4·3 acres. Rice is the main crop and the main food in the southern and central part of the country, while wheat, millet, kaoliang, and other grain crops are raised in the north. Animal husbandry is not much practised, as



Keesing's Contemporary Archives, London]

THIS MAP ILLUSTRATES THE PRESENT POLITICAL SITUATION IN CHINA

there is little spare land for pasturing. China has fallen behind in the production of its traditional tea and silk because of lack of standardization and grading; efforts have been made in recent years to improve quality and increase output of tea, silk, and cotton.

Coal is China's most important mineral. The geological survey of China in 1934 estimated the country's coal reserves at 238,555 million tons, of which more than half was in the mountainous north-western province of Shansi (now largely under Japanese occupation) and almost a third in the neighbouring Shensi. China's annual output of coal is about 20 million tons. China leads the world in the production of antimony and tungsten. It is very poor in other important sources of mineral wealth, in petroleum, iron, copper, gold, and silver. Total deposits of iron are estimated at about 250 million tons, of which about 90 million tons are in Chahar province, while a considerable part of the remainder is to be found in Hupeh and Anhwei provinces, in the valley of the Yangtze. Iron-ore output is at the rate of about 2 million tons a year. Manufacturing industry, in the modern sense of the term, is still in its infancy in China, and is largely concentrated in a few large centres, such as Shanghai, Tientsin, Canton, and Hankow. Cotton mills, silk filatures, flour mills, cigarette factories, and cement works are among the most common types of industrial enterprises. The fighting in the Shanghai-Nanking area was a terrific blow to China's industrial development, since a great number of factories in the region were destroyed or badly damaged.

Education and Religion.—Estimates of illiteracy in China vary from 60 to 80 per cent. Substantial progress in the educational field has, however, been registered since the establishment of the republic. There were 11,667,888 pupils in elementary schools in 1935, as against 2,793,633 in 1912, and the number of universities and colleges during the same period increased from 4 to 82. There has been a special effort to spread adult literacy in the larger cities and in some selected rural districts. An aid in the promotion of elementary literacy has been the so-called 'thousand-character system', instituted by James Y. C. Yen, a prominent Chinese social worker, who picked out the most frequently used of the thousands of characters which make up the Chinese written language, and prepared text-books based on this simplified written language. China's main religions are Buddhism, Taoism, and Confucianism. There are between 5 million and 10 million Mohammedans, mostly in the north-western and far-western provinces of the country. There were 2,818,839 Catholics and 512,873 Protestants in China at the beginning of 1935. Missionary work in China has very considerably promoted educational and medical progress, as mission schools, colleges, and hospitals have been built in many parts of the country.

Finances and Banking.—Under the stress of a rising world price of silver, which produced serious deflationary effects in China, the government, in Nov. 1935, abandoned the silver basis of the currency, and put into effect a system of managed currency. This worked quite smoothly under peacetime conditions; but the war with Japan has exercised a serious detrimental effect on the whole Chinese financial structure. The unit of currency is the *yuan*, or dollar, which at the end of 1937 was worth about 1*s*. 3*d*. The budget for 1937–38 was balanced at 1,000,649,496 dollars, a slight increase over the preceding year. Military expenditures took up 39·2 per cent., and service on loan obligations 32·4 per cent. of the expenditure contemplated under the budget. The largest items on the revenue side were customs receipts (36·9 per cent.), the salt tax (22·85 per cent.), and the consolidated tax (17·55 per cent.), the latter a levy on trade and business. The three largest and most important banks in China are the Central Bank of China, the Bank of China, and the Bank of Communications. There are also 14 Japanese and 19 other foreign banks which carry on business in China.

Army and Navy.—The peacetime strength of the Chinese army (estimate of the *China Year-Book*, 1936) is 2,379,770 men, of whom 1,676,120 are listed as under the direct control of the central government. There are 49 armies of varying degrees of strength. The majority of the Chinese troops are extremely backward as regards training, organization, and equipment, although a number of modern divisions have been formed with the aid of a German military mission which has been resident in Nanking for some years. An air force has been developed with American and Italian technical aid and assistance. The Chinese navy, consisting of five cruisers and a number of gunboats and smaller vessels, total tonnage 41,000, is obsolete by modern standards, and was unable to oppose any serious resistance to Japanese naval operations during the war in 1937–38. (*See* also SIN KIANG.)

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See SINO-JAPANESE WAR. (W. H. CH.)

CHOSEN: *see* KOREA.

CHRISTIAN X (1870–), **King of Denmark and Iceland,** K.G., nephew of Queen Alexandra of Great Britain, succeeded his father, Frederick VIII, in 1912, having been Crown Prince since 1906. One of the most democratic and popular of monarchs, a trained soldier, excellent shot, and experienced seaman, his Silver Jubilee was enthusiastically celebrated at Copenhagen and throughout his kingdoms and the Danish settlements in Greenland on May 15, 1937. The King married, in 1898, Alexandrine, Duchess of Mecklenburg, and by her has two sons. The King and Queen were in London in December for a short private visit.

CHURCH MEMBERSHIP. Except in the cases covered by the notes hereto, the following table gives, to the nearest hundred, the membership of the various Churches in Great Britain as officially stated in the annual reports or at the annual conferences of 1937. The statistics for some of the smaller denominations will be found in the article PROTESTANT CHURCHES OF THE BRITISH EMPIRE.

CHURCH OF ENGLAND	2,382,900 (*a*)
ROMAN CATHOLICS	2,361,500 (*b*)
PRESBYTERIAN CHURCHES:	
Scotland	1,288,600
Wales	182,200
Ireland	113,800
England	81,700
United Free, Scotland	21,800
BAPTISTS	392,500
BAPTISTS, Strict and Particular	20,000
CONGREGATIONAL:	
Union of England and Wales	424,700
Union of Scotland	40,500
Union of Ireland	2,200
METHODIST CHURCH	829,000 (*c*)
SALVATION ARMY	286,400 (*d*)
SOCIETY OF FRIENDS	19,300 (*e*)

(*a*) Actual communicants, for England only, as at Easter, 1936.

(*b*) The Catholic estimate of the total number of members of the Roman Catholic Church in England and Wales only.

(*c*) Members and probationers in Great Britain.

(*d*) Employees only, the vast majority of whom are unpaid; they include officers, cadets, missioners, bandsmen, songsters, etc.

(*e*) Membership in Great Britain only.

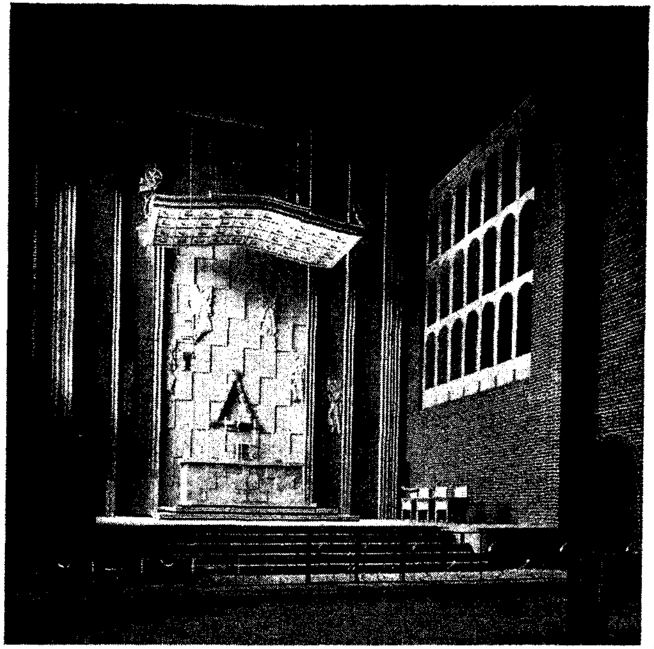
United States.—The religious bodies of the United States, as a whole, despite the economic recession of late 1937, show a steady increase in churches and membership. Government census statistics show that while the population growth of the nation has been ·6 of 1 per cent., the church membership growth has been an even 1 per cent. Out of 87,160,604 citizens in the country, 51,745,907 persons, or 59·3 per cent., are members of churches and synagogues.

This of course does not mean 100 per cent. attendance at religious services, nor 100 per cent. support of religious organizations. The Northern Baptists, for instance, report that 23 per cent. of the members do all the work and that 54 per cent. of the members contribute nothing. The figures probably hold true for other larger Protestant denominations.

The Roman Catholic Church remains the largest in point of numbers, with a membership of over 20 millions. The largest single Protestant denomination is the Southern Baptist group, with 4,482,078.

The latest reports available list the chief Churches and their memberships as follows:

Denominations	Churches	Members, all Classifications
Roman Catholics	18,379	20,831,139
Eastern Orthodox	459	751,000
Baptists	62,099	10,231,197
Church of Christ, Scientist	2,130	202,098
Congregationalists	6,048	1,010,776
Disciples of Christ	8,105	1,602,052



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AN EXAMPLE OF AN ALTAR AND CHANCEL IN MODERN STYLE. ST. MONICA'S, BOOTLE. S. X. VELARDI, ARCHITECT

Denominations	Churches	Members, all Classifications
Evangelical bodies	4,893	1,083,462
Friends	678	85,257
Lutheran bodies	15,218	4,460,132
Methodist bodies	58,367	8,960,162
Mormons	1,967	777,695
Presbyterian bodies	14,319	2,644,092
Protestant Episcopal	7,353	1,918,320
Salvation Army	1,645	255,765
Unitarians	376	98,600
United Brethren	2,850	410,897
Jews	3,118	4,081,242

CHURCH OF CHRIST, SCIENTIST. For the Christian Science movement, including its Mother Church, the First Church of Christ, Scientist, in Boston, Mass., and the branches throughout the world, 1937 was a period of steady progress. In proportion, the movement had its largest growths last year in Australia and in Great Britain.

The original Church of Christ, Scientist, having been founded by Mary Baker Eddy, in Boston, in 1879, the number of Christian Scientists in the United States continues to exceed the number in all other countries, but within the United States the conspicuous growth of the Christian Science movement has moved westward from New England to the Pacific coast. Of the United States, California now has the largest number of Christian Scientists. In this State there are 274 Christian Science churches and societies, besides 11 organizations at colleges and universities, and not less than 1,990 Christian Scientists who make the practice of Christian Science mind-healing their ministry or vocation.

In the United States and Canada, and to some extent in other countries, the Church of Christ, Scientist, has made an increased use of radio. Likewise, the *Christian Science Monitor* has continued to develop its broadcast, 'The *Monitor* Views the News', which consists of editorial comments on important news of general interest.

In Great Britain, the Earl Marshal summoned a delegate representing the Church of Christ, Scientist, to attend the coronation of King George VI and Queen Elizabeth. The delegate nominated by the Christian Science board of directors in Boston attended this ceremony with other religious representatives. In Germany, the Christian Science movement encountered more than a few difficulties made by the Hitler government, but has continued a normal growth. First Church of Christ, Scientist, Berlin, completed and occupied its new edifice in 1937.

CHURCH OF ENGLAND. In England only, the number of communicants at Easter 1936 (the latest period for which statistics are available) numbered 2,382,857, a decrease of 59,086 on the total for the previous year. Pupils on the registers of Sunday schools numbered 1,546,007, a decrease of 82,688 and the largest falling off reported for five years. There were 12,681 incumbents, and the churches and mission buildings normally provided accommodation for 6,151,831 worshippers. Qualified men and women on the electoral rolls of parishes totalled 3,559,926, a decrease of nearly 40,000 on 1935. It is of interest to note that baptisms in 1935 were 57 per 1,000 live births, and that this proportion had in 1936 increased to 59, 382,882 infants being christened. Candidates for confirmation declined from 197,447 in 1935 to 182,738 in 1936.

Voluntary offerings actually raised by parish organizations and church collections entirely for parochial purposes amounted to £5,037,477, a decrease of £28,589 on the previous year. The budget of the central board of finance, approved by the Church Assembly at its summer session, provides for an estimated expenditure in 1938 of £145,000 for the general purposes of the Church of England, such as contributions to the clergy pensions scheme; grants for religious education; central loan fund, etc. Diocesan boards of finance received £600,541 for the broad needs of the Church in their respective dioceses.

In 1937, 19 churches were built or rebuilt and consecrated, partly as the result of the inauguration of the central loan fund. For the purposes of this fund credit facilities for £515,000 were obtained, and applications amounting to £501,160 were received from 29 dioceses. The dioceses are not asked to pay interest on the loans granted, but have to repay the capital sum borrowed in as short a time as possible, in any event within 20 years. The Ecclesiastical Commissioners are able to make a grant up to £10,000 a year for 20 years to be set against the interest charged by the bank on money advanced for the purposes of the central loan fund.

Ecclesiastical Commission.—The total number of poor benefices permanently augmented or endowed by the Ecclesiastical Commissioners out of their common fund has been increased to nearly 9,400 by grants during 1937. The total annual value of the additional provision for the cure of souls in parishes in England is now more than £2,354,000. The Commissioners are faced with the prospect of serious reduction of income as a result of the Tithe Act and of the Coal Bill introduced on Nov. 10. The annual loss under these two proposals will be, it is estimated, nearly £200,000.

The New Church House, being built at Westminster, is making rapid progress, the foundation-stone having been laid by Queen Mary in June. Owing to the rebuilding, the Church Assembly has held its meetings at the Central Hall, Westminster (Methodist). The library at Church House is to become a record office for the synodical and constitutional Acts of the entire Anglican Communion.

Church and Films.—The Cinema Christian Council entered into an agreement with the Religious Film Society, whereby the council will undertake the propaganda and advisory side of the work, leaving to the Religious Film

Society the practical tasks of production and distribution. During 1937 a new organization, known as the Church Film Society, was formed.

Church Assembly.—Sessions of this, the National Assembly of the Church of England, were held as usual in February, June, and November. Among the more important reports presented were the second report of the commission on the law relating to faculties, the first report of the commission on parochial endowments, and the report of the social and industrial commission on church and youth. At the autumn session, the assembly decided on a policy of concentration for the training colleges for women teachers, whereby the colleges at Brighton, Truro, and Peterborough are to be closed.

The Church and Marriage.—This has been one of the chief questions of the year. It was discussed in January at the Convocations of both Canterbury and York, the chief resolutions embodying the principle that, when two persons have contracted a legal marriage during the lifetime of a former partner of one of them, or of their former partners, they should not be baptized or allowed to partake of the Holy Communion until the parish priest has informed the bishop of the diocese of the facts. The bishop shall then give directions in writing as to whether the person or persons shall or shall not be repelled from the sacraments.

The question of the marriage of divorced people in church has also been discussed, and the Church Assembly, at its autumn session, welcomed 'the considered judgment of the Convocations concerning the inadmissibility of the use of the Prayer Book Marriage Service for the remarriage of any person whose original marriage has been civilly dissolved, but whose original spouse is, at the time of such proposed remarriage, still living'.

Cathedral Commissioners.—During the year 25 schemes framed by the Cathedral Commissioners were confirmed by orders in council. The amount of assistance given to cathedrals out of the common fund of the Ecclesiastical Commissioners was £14,081.

Religious Education.—As the result of conferences held in January and July, an important policy was adopted for Sunday Schools. This concerned a new approach in the teaching of 'over-elevens' along the lines of methods used in the senior day schools with the development for those children of guilds, companies, or clubs. In November a scheme of home religious teaching by post was launched.

Anniversaries.—A service on the anniversary of the laying of the foundation-stone of Guildford Cathedral was held by the Archbishop of Canterbury in July, and Truro Cathedral jubilee services took place in November. The 300th anniversary of the Ancient Society of College Youths (bellringers) was celebrated in London.

CHURCH REUNION. If no tangible steps have been taken in the actual welding of Churches in Great Britain, such as the blending of the Congregationalists, Presbyterians, and Methodists in the United Church of Canada, progress has yet been made in co-operation of effort between different denominations, especially on new housing estates—where an understanding is often reached between one body and another; and under the chairmanship of the Bishop of Southampton, a body known as The Friends of Reunion has been established, pledged to work for the unity of the Christian Church.

At its annual assembly at Bristol, the Congregational Union (*see* CONGREGATIONAL CHURCHES) discussed reunion and the possibility of forming a united Oecumenical Church with Baptists and Presbyterians. The report of a special committee dealing with the subject was presented at the annual assembly of the Baptist Union at Manchester in April, but baptism itself raised one difficulty, and the method of administering the Communion another.

In July, a World Conference on Church, Community, and State, presided over by the Archbishop of Canterbury, took place in the Sheldonian Theatre, Oxford, its object being to attempt to discover, by interchange of views among various sections of Christian thought, what are the main questions confronting the Church in the modern world. There were representatives from India, the U.S.A., China, and many European countries.

The World Conference on Faith and Order was held, under the presidency of the Archbishop of York, in Edinburgh in August, when some 414 delegates from 122 Christian communions in 43 different countries met. Among those who attended were Chinese, Japanese, Indians, and Negroes.

A Parliament of Religions—Christian, Moslem, Hindu, Parsi, Sikh, etc.—was held at Calcutta early in March. The president was Sir Brojendranath Seal; many countries, including Great Britain and the U.S.A., were represented, the former by Sir Francis Younghusband and the latter by Colonel Lindbergh.

CIANO, COUNT GALEAZZO (1903–), Italian minister of foreign affairs since 1936, is the son of Count Costanza Ciano, a naval officer of note, former minister of communications, and president of the Chamber of Deputies.

The young count started public life as a diplomatist, becoming secretary at one of the South American embassies, then consul-general at Shanghai; in 1934, he married Mussolini's daughter, and in the same year became minister of propaganda and press director, but from the outbreak of the Italo-Abyssinian War served in the air arm and became leader of the 'Desperata' squadron of bombing and pursuit planes, gaining a reputation for ruthless efficiency.

As foreign secretary, Count Ciano during 1937 was negotiator of many pacts and agreements (*see* ITALY) and took part in various 'Non-Intervention' discussions. In January, he was concerned in the Gentlemen's Agreement with Great Britain, and later in the same month had conversations with General Göring, the German air minister; in March, at Belgrade, he initialled a political agreement with Yugoslavia (*q.v.*), a trade agreement having been previously concluded; in May, he accompanied King Victor Emmanuel III on an official visit to Budapest, where, in conversations with the Hungarian ministers, the political and economic situation in central Europe was discussed and complete harmony attained; and in June he had conversations with Field-Marshal von Blomberg, the German war minister.

Following Mr. Chamberlain's personal letter to Mussolini at the beginning of August, Count Ciano welcomed the fact that in both countries there was now a sincere will to come to an understanding. On Nov. 6, with Herr von Ribbentrop (Germany) and Mr. Hotta (Japan), he signed the Anti-Communist Pact.

CIGARS AND CIGARETTES. The chief feature in the British market during the year 1937 has been the steady and continuous growth in the amount of tobacco entered for home consumption, amounting to 151,209,340 lb. for the ten months' period ending Oct. 31, as compared with 144,815,216lb. and 137,062,993lb. in the corresponding periods of 1936 and 1935. Approximately 77 per cent. of this is consumed in the form of cigarettes, 99 per cent. of which are made exclusively from flue-cured tobacco imported from the United States, while the introduction of full-sized cigarettes, at ten for *4d.*, containing a proportion of Empire leaf has been in a measure responsible for an increase in leaf imports from Empire countries. The *per capita* consumption is 3·71lb., which is about the fourth highest rate of *per capita* consumption among European countries, although materially lower than the rate in the United States. Cigar consumption has gradually decreased, and to-day is only three-fifths of what it was 30 years ago. In spite of a small recovery lately, cigars account for less than 1 per cent. of the total consumption.

Similar trends are observed in the United States, where details for the first nine months of 1937 show that the American consumption of cigarettes amounted to 123,336,525,174, an increase of 8,176,682,441 over the same period of the previous year. The *per capita* consumption of cigars is only ·97lb. as compared with 1·33lb. in 1900, but the total consumption is now 124 million lb. as compared with 101 million lb. 37 years ago. Production figures for the first nine months of 1937 are given as 971,024,593, which show a gain of 199,651,252 over the same period of the previous year.

America's total *per capita* consumption of tobacco has, however, been on the down grade since 1920. At the moment the *per capita* figure in the United States is practically 7lb.

All over the world a similar decline in cigar smoking is noted, the latest details from Havana showing that exports to all countries during the first eight months of 1937 were 24,380,740, as against 30,562,056 in the comparative period of 1936, while each year cigarettes, especially Virginia types, gain new converts, and all indications are that this movement will continue at the expense of other forms of smoking. (D. L. H.)

C. I. O.: *see* COMMITTEE FOR INDUSTRIAL ORGANIZATION.

CITRINE, SIR WALTER (McLENNAN), K.B.E. (1887–), British trade union official, born in Liverpool, started life as an electrician. A district secretary of the Electrical Trades Union from 1914, he became assistant general secretary in 1920, and in 1924 was elected assistant secretary of the Trades Union Congress, becoming secretary in 1926. Since 1928 he has also been president of the International Federation of Trade Unions (16,000,000 members), and its conference at Warsaw, July 1–3, 1937, was held under his chairmanship. Citrine is a director of the *Daily Herald*, a member of the court of governors of the London School of Economics, and chairman of the World Non-Sectarian Anti-Nazi Council. He has written much about trade union and wider problems, his latest publication being *I Search for Truth in Russia.* He has travelled extensively for the furtherance of international trade unionism, twice visiting the United States to lecture. One of the most polished speakers of British trade unionism, he is regarded in many quarters as its leading intellect. He was knighted in 1935.

CITY PLANNING: *see* TOWN AND COUNTRY PLANNING.

CIVIL LIST. In Great Britain, the accession of a new Sovereign in Dec. 1936 made necessary the introduction of a new Civil List to provide for the maintenance and expenses of the Crown; this was done, after a select committee had issued a report (May 3), by the chancellor of the exchequer in the House of Commons on May 24; the bill was given a third reading on June 1, all amendments having been negatived, and on June 10 received the royal assent.

The total of the Civil List itself remained at the same figure as that arranged for the previous Sovereign, Edward VIII, had he been married, and was made up as follows:

	£
His Majesty's Privy Purse	110,000
Household Salaries and Retired Allowances	134,000
Expenses of Household	152,800
Royal Bounty, Alms, etc.	13,200
	£410,000

The revenues of the Duchy of Cornwall which, in default of a Duke of Cornwall, are vested in the Crown, were estimated to amount in 1937 to £106,000; from this are paid the annuities of the Princess Elizabeth and the £10,000 granted to the Duke of Gloucester in addition to the £25,000 he receives as a younger son of George V in respect of the duties he performs as representing the Heir, the balance going to reduce the amount payable from the consolidated fund to the Civil List.

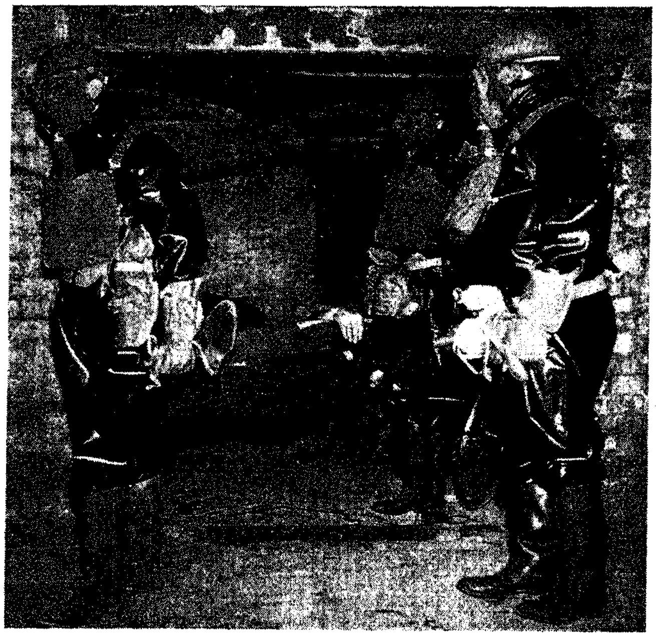
Grants made to other members of the Royal Family are as follows:

	£
H.M. Queen Mary	70,000
The Princess Elizabeth	6,000
The Duke of Gloucester	35,000
The Duke of Kent	25,000
The Princess Royal	6,000
The Princess Louise	6,000
The Duke of Connaught	25,000
The Princess Beatrice	6,000
H.M. the Queen of Norway	6,000

In the event of widowhood, H.M. Queen Elizabeth is to receive an annuity of £70,000, and the Princess Elizabeth, on attaining the age of 21, unless at that time there is a Duke of Cornwall living, an additional £9,000 per annum.

The Civil List Act further provided that the aggregate of Civil List pensions granted in any one financial year might amount to £2,500, in place of £1,200 as had been the rule for a hundred years. If acted upon, this will eventually entail the disbursement for this purpose of about £50,000 per annum instead of the present £23,000.

CIVIL POPULATION, PROTECTION OF. The organization of the steps to be taken to protect the civil population of Great Britain in the event of air raids is entrusted to the Home Office, Air Raid Precautions Depart-



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AIR RAID PRECAUTIONS. RESCUE PARTY BRINGING OUT A SUPPOSED CASUALTY DURING PRACTICE AT SOUTHAMPTON.

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AIR RAID WARDEN DEMONSTRATING GAS-MASKS TO A FAMILY IN A LONDON SUBURB

ment, which was set up, not precipitatedly, in May 1935. The issue of warnings to the population, and the execution of the steps necessary to protect it, are the responsibilities of the local authorities, who will themselves be warned, when danger is impending, by civilian observers working from the Air Ministry's Intelligence Centre. There has been considerable delay in the final preparation of plans owing to a prolonged dispute between the government and the local authorities as to the apportionment of the costs to be incurred, but at the close of the year parliament had before it an Air Raids Precaution Bill to regulate this matter. In the meanwhile the department has not only worked out the organization of protection, but has also done a great deal of educative work in arranging courses of instruction in anti-gas treatment for doctors, police, and volunteers from the general public, and also in other aspects of 'passive defence'.

There are three types of danger to be met: high explosive bombs, widespread fires due to incendiary bombs, and the dropping of bombs containing poison gas or, alternatively, the spraying of poison gas from aeroplanes. The first problem is being virtually ignored on account of cost: the Home Secretary has stated in the House of Commons that the cost of erecting shelters against direct hits would be about £1,500,000,000; and the only precautions contemplated were against splinters. Public shelters are to be provided, and instructions about shelter-rooms to be issued to householders. The number of high-explosive bombs which an aeroplane can carry is limited; the more the population is dispersed, the safer it is, and one of the best precautions is to stay at home; and the official view appears to be that the incendiary bomb is the most universally dangerous. A medium bomber can carry enough incendiary bombs to start 150 separate simultaneous fires, and all the usual fire-fighting appliances fail, as water is useless for the purpose till the contents of the bomb are exhausted. Four inches of reinforced concrete will provide safety, but apart from this, dry sand will prevent fires from spreading, and removal of inflammable materials from attics and top-floors is a valuable precaution. The official precautions will be to provide a hand-pump, a shovel, and a box of sand, and to send fire-fighting machines on frequent patrol.

Gas is the danger perhaps most widely feared. The first protective step is the provision of gas-masks, which are completely effective except against the bli ster gases Germany, unlike Great Britain, seems unlikely to provide the population with respirators, on the score of expense. Further necessary steps to be taken are instruction in the use of protective clothing and in the preparation of gas-proof rooms (which, contrary to common opinion, can quite easily be improvised), while local authorities will organize properly trained decontamination squads to destroy persistent gases and to isolate contaminated areas. The steps taken cannot in any event be complete; they can only mitigate the danger, not remove it. And there are several problems unsolved, notably the question of the evacuation of civilians from dangerous areas, and the finding of a type of gas-mask suitable for children under three. (*See* also CHEMICAL WARFARE.) (W. T. WE.)

CIVIL SERVICE. The most noteworthy particular about the British Civil Service of recent years is, perhaps, its growth, both in actual numbers and in the part it plays in the life of the people. This growth—on both sides—has come about largely as the result of ever-increasing social legislation (national insurance, public assistance, transport, and social services of all kinds), the expansion of the work of the Foreign Office, partly owing to the fact that London has now become the world diplomatic centre, and the additional duties devolving on the Customs and Excise, the Dominions Office, etc., by reason of the Ottawa Agreements, the development of the Imperial Airways, and the general conditions of international trade. On April 1, 1928, the grand total of personnel in all departments was 297,140; in 1936 this had risen to 338,604, the Post Office accounting for 60·8 per cent. of this figure as against 64·5 per cent. in 1928, in spite of an increase of over 14,300 Post Office employees during the period.

On the domestic side it has to be recorded that in April 1936 Miss Ellen Wilkinson's resolution to give effect to the resolution passed by the House of Commons in 1920, placing women employed in the common class of the Civil Service on an equal footing with men as regards pay, was narrowly defeated; a year later higher scales of pay (amounting, in London, to an ultimate increase of 7*s.* 6*d.* per week for men to a maximum of 82*s.* 6*d.*, and the same for women to a maximum of 67*s.* 6*d.*), longer holidays, and pensions for over 3,000 clerks of the Unemployment Assistance Board; in July 1937, the Lord Chancellor settled a controversy on the headship of the Civil Service by stating that from at least 1872 that position had been held by the Permanent Secretary to the Treasury; and in August the Postmaster-General, Major Tryon, refused to grant the Post Office workers' demands for a 40-hour and 5-day week.

In the United States, the principal developments in the Civil Service during 1937 included substantial extensions of the system of enrolment and promotion by merit in States and cities, balanced by the failure of Congress to fulfil platform pledges to extend the Civil Service of the Federal Government; the continued development of employment, training, and apprenticeship; the drive for public employee associations; the launching of a movement to establish professional standards for relations officers and technicians; and the recommendations of the president to replace the United States Civil Service Commission by a relations officer, to extend the 'merit' system, and to develop Civil Service procedures towards a career service.

Five States enacted State-wide Civil Service laws, and in 29 the newly organized unemployment compensation offices have been placed under the merit system, as have also in most States the bureaux of old-age assistance. The Civil Service Assembly reports that during the two-year period ending December 31, 1936, 57 new city Civil Service commissions were established in addition to extensions under existing commissions. During 1937, 28 cities and four counties adopted the merit system. Several appointments to key personnel positions in the States and the temporary loan of technicians indicated a trend to waive the local residence rule.

During the year, however, some laws were enacted increasing the number of patronage positions; the Housing bill, for instance, exempted all positions paying more than $1,980. On the other hand, the labour department established a well-organized personnel office, following the example of the department of agriculture, and the personnel staffs were expanded in numerous instances. In Washington, therefore, some losses as well as gains were registered.

From the financial point of view, the year was notable (*a*) because depression salary cuts were in most cases ended, and in some cases salary levels were raised above the 1929 figures; and (*b*) because appropriations for operating expenses were increased in a significant number of cases. A related trend is towards the much greater use of mechanical equipment.

Rapid development of staff enlistment and training facilities in the offices took place at all levels of government. The first courses at the Littauer Graduate School of Public Administration at Harvard University were offered in September, and the University of Pennsylvania developed plans for its new public service training programme. Syracuse University and the University of Washington (Seattle) are also holding courses for State, county, and city officials and employees. Established training centres in other cities showed increased enrolment. Meanwhile, the George-Deen Act of 1936 has opened the door to Federal aid for vocational training in the public service field.

Training through apprenticeship is steadily expanding. Such programmes were instituted during the year by the Tennessee Valley Authority, the United States Indian Office, the Panama Canal Zone, the State of Michigan, and the city of San Diego, while the earlier programmes of Los Angeles county, New York City and the State of California, and of the Institute of Public Affairs (Washington, D.C.) were enlarged.

In the examination field we may note a new type of recruitment by the United States Civil Service Commission in its social science analyst test, designed for those specializing in economics, sociology, and political science. The same commission has also initiated a movement in favour of competitive promotional examinations.

New ground was staked out by public employee associations. The Committee for Industrial Organization entered the public service field in opposition to the American Federation of Labor. For civil employees of the National Government, the Committee for Industrial Organization set up the United Federal Workers of America; for the State and local employees, the State, County, and Municipal Workers of America. The competing American Federation of Labor group is the American Federation of State, County, and Municipal Employees. Other groups not affiliated with a labour organization also sprang up in different sections. In an important statement issued September 6, 1937, President Roosevelt stated for the first time the attitude of the Chief Executive on civil service unions. Recognizing that organizations of government employees have a logical place in government affairs, the president pointed out that collective bargaining cannot be transplanted into the public service, and emphasized his conviction that militant tactics had no place in such groups. 'A strike of government employees', said the president, 'is unthinkable and intolerable'. This view was supported by the unions themselves.

The influence of the Federal Government upon the personnel standards of the States and cities, exerted principally through the agencies administering Federal grants-in-aid, continued to be strong.

At the Ottawa convention of the Civil Service Assembly of the United States and Canada, unanimous approval was given to the establishment of certificates of competence for relations officers and technicians; appropriate standards will be established and certificates granted during 1938. A code of ethics is under consideration.

During the year there was much discussion of the proposal to replace the United States Civil Service Commission by a single administrator, selected by open competitive examination, but President Roosevelt endorsed the proposal, which is now pending before Congress. Other phases of the programme called for the elimination of patronage, the enlargement of departmental personnel offices, and the general intensification of personnel work.

CLEVELAND, a city of north-east Ohio, occupies 73·74sq.m., with a population (1930) of 900,429, of which 597,603 were native whites, 229,487 foreign-born whites, and 71,899 negroes. On July 1, 1937, the population was estimated at 924,400.

Strikes, with attendant riots and other disorders, were numerous in Cleveland in the spring and summer of 1937 and included those at the Fisher Body plant, May 13, and at the Industrial Rayon plant on May 17. The C.I.O. (Committee for Industrial Organization) lost the election in the latter strike, July 17, and a settlement was effected. Serious rioting accompanied further strikes in other works in late July and early August. Police and Ohio National Guardsmen were called upon to quell the disorders.

In the financial field the outstanding event of 1937 was the change in ownership of the so-called Van Sweringen rail empire, consisting of the Chesapeake & Ohio, the Erie, the Nickel Plate and allied railroads.

CLINICS: *see* PUBLIC HEALTH SERVICE.

CLOTHING INDUSTRY. General trends in the clothing industry during 1937 showed increases in production costs, followed by the further development of more economical methods of production. In consequence the straight-line system saw wide adoption. It provides for a continuous series of operations, one succeeding the other in an unbroken flow of cumulative work. In the acquisition of specialized, single motor machines, there was further indication of the direction which the clothing industry has taken. These specialized machines, since they can be shifted in the factory, provided that flexibility without which the straight-line system cannot function. But, even more important, the machines laid a positive foundation for the scientific and accurate estimation of costs, and ensured the twin elements of quality and quantity absolutely indispensable to the successful completion of profitable mass production.

In Great Britain, increases in the production of ready-to-wear clothing were apparent in the Board of Labour's figures for persons aged 16–64 who have been insured against unemployment in the clothing trades. Taking July 1925 as 100, the figure for 1936 was 114·5, and it rose higher still for 1937. There was also an improvement in the quality of the clothes produced, as well as in the range of styles. The present tendency is for firms to specialize more and more either by manufacturing only one type of article such as raincoats, or by limiting their production to one class of work.

From the consumer's point of view the basic prices of all woollen goods were increased 10–15 per cent. The biggest increase in men's wear was in the sale of winter overcoats. In sportswear, there was a heavy demand for flannel trousers and jackets; worsted and hopsack flannels comprised 90 per cent. of the manufacturers' output. Dark shades of blue and grey were dominant, with emphasis on coronation red and coronation blue for accessories.

In women's wear, the use of rayon was still further extended. Staple fibre spun on cotton machinery became an important factor in Lancashire's production of dress goods, and a recent blending of the fibre with wool further increased the range of fabrics. Knitwear has vastly improved, since knitted fabrics can now boast a firm finish enabling them to be as well tailored as suitings, which they can be made to simulate. The leading colours put forward, by the British Colour Council, for early 1937 were viking blue, burnt rust, and amber gold, and for autumn and winter, the 'gipsy' colours, *zigeuner* (a reddish mauve) and gipsy violet. The three leading themes on which attention was directed for early 1938 were 'Chelsea Bouquet', 'Hyacinth Blues', and 'Sea-tones.' The Empire Exhibition at Glasgow is expected to create a demand for Scottish designs, *e.g.* kilts and tartans. A new fabric of interest is woven from glass fibres of such fine diameter that the yarns can be tied into knots, and the woven products crumpled without damage. Cords, braids, and materials have already been produced; they have the appearance of spun rayon, but are somewhat stiffer in handling.

The women's clothing industry has to face keen competition from abroad; the value of garments of woven fabrics (costumes, dresses, coats, skirts, etc.) imported during 1937 being £1,784,796, with Germany, the United States, Austria, France, Hungary, and Canada as leading importers.

COAL INDUSTRY. The estimated output of coal in Great Britain for the year 1937, namely 240 million tons, shows a very substantial increase over 1936.

This increase is due to a better home demand, especially by the heavy industries, and also to a small increase in the export trade.

TABLE I

Year	Output 000 Tons	Annual Change 000 Tons
1929	258,000	—
1930	244,000	− 14,000
1931	219,000	− 15,000
1932	209,000	− 10,000
1933	207,000	− 2,000
1934	221,000	+ 14,000
1935	222,000	+ 1,000
1936	228,000	+ 6,000
1937	240,000	+ 12,000

It is well to remember, when considering the annual output of coal in Great Britain, that the science and art of coal utilization has made great strides in the past decade, and that the use of fuel oil has increased greatly.

For instance, in 1925 one ton of coal carbonized by a modern gas company produced 13,600cu.ft. of illuminating gas, as well as 11·4galls. of tar, whereas to-day the figures are over 15,000cu.ft. of gas and nearly 13galls. of tar. Since 1925 the quantity of electricity generated per ton of coal burned has been increased by 20 per cent., and there has been at least a 10–15 per cent. increase in the efficiency of burning coal under boilers for steam-raising purposes. Therefore the annual amount of coal produced does not correctly indicate the relative state of trade over 10 years or more.

Production by Districts.—During the past 10 years there have been no great changes in the relative outputs from districts except in the exporting districts like Durham and South Wales, where a heavy drop occurred during the slump period.

In the older mining districts like Durham and the West of Scotland, many small mines have been abandoned, but the resulting loss in output has been overcome by the greater activity of the younger and larger mines. In other words, although the output from the various districts remains relatively constant, except where affected by trade conditions, there has been a definite shuffling within the districts themselves. This shuffling has been due partly to voluntary amalgamations within the districts as well as to the closing down of obsolescent mines.

TABLE II

Production by Districts

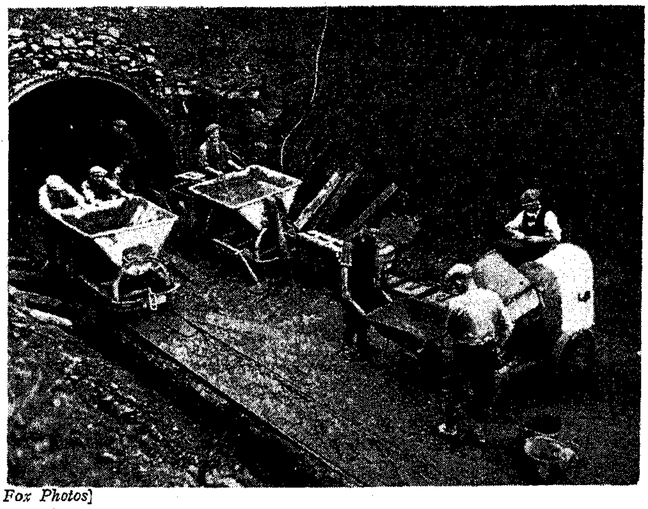
	1929 000 Tons	1933 000 Tons	1936 000 Tons	1937 000 Tons
NORTHUMBERLAND	15,000	13,000	14,000	15,000
DURHAM	39,000	28,000	31,000	32,000
YORKSHIRE	46,000	37,000	42,000	44,000
LANCS, CHESHIRE, AND NORTH WALES	19,000	16,000	18,000	18,000
DERBY, NOTTS, AND LEICESTER	33,000	28,000	31,000	33,000
STAFFS, SHROPSHIRE, WORCESTER, AND WARWICK	18,000	17,000	20,000	21,000
SOUTH WALES AND MONMOUTH	48,000	34,000	34,000	36,000
OTHER ENGLISH DISTRICTS	6,000	5,000	6,000	7,000
SCOTLAND	34,000	29,000	32,000	34,000
TOTAL	258,000	207,000	228,000	240,000

Number Employed.—During the year, there has been a steady increase in the number of men employed, the figures rising from 766,000 during the March quarter to over 780,000 for the last quarter of the year.

The principal increases have been in South Wales and Monmouth, Durham, and Scotland.

For the first time since 1929, there were more men employed in the second quarter of the year than in the first; usually the decline in the demand for household coal causes a diminution in labour in the Midland house-coal collieries.

The fact that the employment figures do not show any definite decline is interesting, in view of the extensive advances that are being made yearly in the use of machinery at the coal face.



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NEW COLLIERY NEAR CARDIFF—WORK UPON A NEW LEVEL AT GLANYLLYN

TABLE III

Employment Figures

End of	1936	1937
March . . .	763,000	766,000
June	750,000	778,000
September . . .	749,000	780,000
December . . .	761,000	780,000

Utilization of Output.—The year 1937 has witnessed a definite expansion in the heavy industries, which is reflected in the increased demand for coal for home consumption.

The quota and supplementary allocations for imports of coal and other fuel into France reverted in the early months of the year to the level of the previous autumn, but were increased by 10 per cent. in March, during which month a new category known as the complementary quota was introduced.

In Belgium the coal import licence tax was suspended and remained suspended on all coking coals throughout the year, but in May the quota restrictions were reimposed on other industrial and domestic coals.

The imports in the German customs area show little change, the increasing German demand for coal being met from other sources.

The export of coal to Italy was resumed in Jan. 1937, and reached a figure of over 2 million tons by the end of the year, as compared with 60,000 tons the previous year.

The Spanish trade dropped, in spite of the import duties being reduced at ports controlled by the Valencia Government.

The effect of trade agreements with the Baltic States and Scandinavia is shown by the definite increase in the amount of coal shipped to these zones, in spite of increasing competition from Poland and Germany.

TABLE IV

Utilization of Output

	1913 000 Tons	1933 000 Tons	1936 000 Tons	1937 000 Tons
Home consumption .	183,000	148,000	175,000	184,000
Exports (including coke) . . .	75,000	42,000	37,000	42,000
Foreign bunkers. .	21,000	13,000	14,000	14,000

TABLE V

Destination of Exports

(*Coal Only*)

	1929 000 Tons	1933 000 Tons	1936 000 Tons	1937 000 Ton.
BALTIC STATES . .	712	1,063	1,774	1,914
SCANDINAVIA (SWEDEN, NORWAY, AND DENMARK) . . .	5,974	5,824	7,350	8,504
GERMANY . . .	5,521	2,360	3,046	3,256
FRANCE, BELGIUM, AND HOLLAND . .	20,308	11,714	8,980	10,479
ITALY . . .	7,095	4,793	60	2,246
SPAIN AND PORTUGAL.	2,833	2,069	1,734	1,637
MALTA, GIBRALTAR, AND CHANNEL ISLANDS .	742	569	718	755
IRISH FREE STATE .	2,456	1,255	2,459	2,506
EGYPT AND OTHER COUNTRIES . .	5,733	3,223	2,877	1,957
AFRICA AND ASIA .	1,706	679	629	1,237
NORTHERN AND CENTRAL AMERICA .	1,172	2,506	1,839	1,700
SOUTH AMERICA. .	5,271	2,876	2,893	3,237
OTHER DESTINATIONS.	740	137	160	572
TOTAL . . .	60,263	39,068	34,519	40,000

Cost of Production and Profit per Ton.—The average declared value of coal sold has risen during the year from 14*s.* 7½*d.* per ton to 15*s.* 8*d.*

This rise has been reflected both in the home and the export markets.

The rise in the price of export coal was not pronounced in the early part of the year, but substantial increase took place in the later half, there being an average rise of 3*s.* per ton in Best Durham Gas Coal and 1*s.* 6*d.* in South Wales Large Steam in June and July.

An increase in price has also taken place in industrial coal, particularly in that supplied to public utility undertakings.

It is interesting to note that in a report issued by the Board of Trade in June on the operation of the district selling schemes, the following sentences occur:

'The introduction of the selling schemes coincided with a strongly marked increase in the demand for coal. In fact, during the early months of 1937 there were indications that in some respects demand had outrun supply. It was natural in these circumstances that prices should harden. Even had there been no Sales Control Committees in operation there would have been a substantial increase in the price of coal, although it is probably true to say that in a number of instances the operations of those committees prevented a measure of inter-colliery competition which would otherwise have made itself felt even though demand was brisk'.

During the year under review substantial increases in wages became operative in most districts, due to percentages above the minimum being paid on the miner's basic wage in more than half the producing districts. It will be remembered that a miner's wages fluctuate with the prosperity of the industry. The principle is that, after certain definite items of cost have been taken into account, any difference between these and the realized value of the product is divided between owners and their employees in the proportion of 20 to 80. The employees are protected against very low wages in times of trade depression by the provision of a fixed minimum percentage addition to their basic wage.

In addition, new wages agreements were amicably negotiated in South Wales, Durham, Northumberland, North Derbyshire, and Yorkshire, whereby the majority of the employees obtained higher wages and/or an improvement in conditions of employment.

The average cash earnings per shift of all classes throughout the coalfield are estimated at 10*s.* 9*d.*, or 9*d.* more than a year ago.

During the year there has been a decided rise in the price of colliery stores, especially timber and steel. The increased cost of pit timber, which comes principally from the Baltic, Scandinavia, and France, is partly accounted for by the rise in freights.

TABLE VI

Cost of Production and Proceeds per Ton of Coal Disposed Commercially

	1936		1937	
	s.	*d.*	*s.*	*d.*
Wages	9	2	9	11
Stores and Timber	1	7	1	9
Other costs	2	6	2	6
Miners' Welfare Fund	0	0·5	0	0·5
Royalties	0	5·65	0	5·5
	13*s.*	9·15*d.*	14*s.*	8*d.*
Deduct proceeds of Miners' Coal	0	0·90	0	1
Net costs	13*s.*	8·25*d.*	14*s.*	7*d.*
Net proceeds	14*s.*	7·5*d.*	15*s.*	8*d.*
Net costs	13*s.*	8·25*d.*	14*s.*	7*d.*
Credit balance	0	11·25*d.*	1*s.*	1*d.*

Accidents.—During the year the fatal accident rate has not altered materially from recent years, the figure being approximately 1 per 1,000 men employed including underground and surface.

The accident rate per 100,000 man shifts worked above and below ground was 0·53 in 1934 and 0·39 in 1936.

There have been three serious mining accidents during the year, all explosions: two in North Derbyshire, one at Markham Colliery and the other at South Normanton Colliery, causing the deaths of 9 and 10 persons respectively; and one in North Staffordshire at Holditch Colliery, involving 30 deaths.

Fox Photos]

MINERS REHEARSING PRECAUTIONS AGAINST UNDERGROUND FIRE; ERECTING SANDBAGS TO WALL UP THE AFFECTED AREA

General.—During the year now past, installation of underground machinery has continued its upward trend, and approximately 60 per cent. of the coal mined in Great Britain is now undercut by coal-cutting machines as compared with 31 per cent. in 1930. The increase applies to underground conveyors, the figure having risen from 17 per cent. in 1931 to 53 per cent. in 1937.

A steady rate of advance is also noticed in the provision of coal-cleaning plant. Thirty per cent. of the total coal mined was washed in 1930, and to-day the percentage is 46 per cent., the number of washeries increasing from 685 to 780, and in addition many of the existing washers have been enlarged.

The method of cleaning by water concentration being first in the field obtained a good start over the dry-cleaning process, but during the past few years the rate of installation of both types has been relatively the same, though on the whole wet washers have had a larger capacity.

Legal.—During the year, the Royal Commission on Safety in Mines has concluded the hearing of evidence, and is at present considering its report. On the findings of this commission will be based a new Act to replace the Coal Mines Regulation Act, 1911.

In addition, H.M. Government presented to Parliament in November the Coal Bill, 1937. This bill is in four parts: (i) the unification of coal royalties under the ownership and control of a Coal Commission; (ii) provision for the furtherance of reorganization in the industry by transferring to the new Coal Commission the functions of the Coal Mines Reorganization Commission, and by varying the powers of compulsory amalgamation given to the latter body by the Coal Mines Act, 1930; (iii) extension to the end of 1942 of the duration of Part I of the Act of 1930, which is the statutory basis of the organized selling schemes, including certain amendments to strengthen the protection of the interests of consumers; (iv) miscellaneous and general provisions.

In Part I, it is suggested that a sum of £66·45 millions be granted as compensation to royalty owners, and that this sum be allocated by a central valuation board assisted by various regional boards. In Part II the new Coal Commission is directed to endeavour to reduce the number of coal-mining leases where they think it desirable in the interests of efficiency. No compulsory amalgamations can be forced on to the industry until the Board of Trade has made an order to this effect, and the order has been laid before both Houses of Parliament in draft for 28 sitting days.

All figures for 1937 are estimated from figures obtained for the first nine months of the year.

(J. A. S. R.)

The coal industry in the United States, having, as a whole, declined 41 per cent. from the 1929 high level, had recovered, in 1936, to 80 per cent. of this level. In the rest of the world the industry declined only 21 per cent. and had recovered to practically its former level. The following table gives the coal production between 1929 and 1936 for all States contributing more than 5,000,000 short tons, which in all account for about 95 per cent. of the total. Preliminary reports for 1937 indicate a bituminous output of 440,265,000 tons, as compared with 434,070,000 tons in 1936, an increase of 1·4 per cent., while anthracite dropped 8·5 per cent. to 50,091,000 tons, against 54,760,000 tons in 1936; this gives a total output of 490,366,000 tons in 1937, against 488,830,000 tons in 1936, an increase of only 0·3 per cent.

UNITED STATES PRODUCTION OF COAL
(SHORT TONS)

	1929	1932	1934	1935	1936
ALABAMA . .	17·9	7·9	9·1	8·5	11·7
COLORADO . .	9·9	5·6	5·2	5·9	6·8
ILLINOIS . .	60·7	33·5	41·3	44·5	50·5
INDIANA . .	18·3	13·3	14·8	15·8	17·4
KENTUCKY . .	60·5	35·3	38·5	40·8	47·6
OHIO . . .	23·7	13·9	20·7	21·2	23·0
PENNSYLVANIA .	143·5	74·8	89·8	91·4	108·5
TENNESSEE . .	5·4	3·5	4·1	4·1	5·1
UTAH . . .	5·1	2·9	2·4	2·9	3·2
VIRGINIA . .	12·7	7·7	9·4	9·7	11·6
WEST VIRGINIA .	138·5	85·6	98·1	99·2	117·5
WYOMING . .	6·7	4·2	4·4	5·2	5·8
Total Bituminous	535·0	309·7	359·4	372·4	434·1
Anthracite . .	73·8	49·9	57·2	52·2	54·8
Grand Total .	608·8	359·6	416·5	424·5	488·8
Others . .	32·1	21·5	21·6	23·2	25·4

Recovery in the bituminous industry has been fairly consistent since the low point of 1932, although the increase in 1937 was small, reflecting the later industrial recession; at the end of July production was over 10 per cent. ahead of 1936. Anthracite made a good recovery up to 1934; irregular conditions followed, with the 1937 output down almost to that of 1932, due largely to increasing competition from oil and gas as household fuel. Pennsylvania is the foremost producing State for coal as a whole, but, eliminating anthracite and comparing only on a bituminous basis, Pennsylvania has lost the leading position to West Virginia. These two States alone produce more than half the total bituminous output of the country. By fields, about 70 per cent. of the bituminous output comes from the Appalachian region (Pennsylvania, Ohio, West Virginia, Virginia, Eastern Kentucky, and Tennessee), 20 per cent. from the central region (Indiana, Illinois, Iowa, Missouri, and Kansas), 6 per cent. from the Rocky Mountain and western States, and 3 per cent. from the southern field (Alabama).

International trade in coal is small; imports are usually under 1 million tons and exports have ranged from 24 million tons in 1929 to 10 million tons in 1932, including bunker coal and the coal equivalent of coke exported.

Technologically, trends of importance are increases in stripping operations, mechanical loading, and mechanical cleaning, and improvements in safety conditions, reducing the fatality rate. Politically and economically the main feature of 1937 was the passage of the Guffey-Vinson Bill, the Bituminous Coal Act of 1937, but the full effect of its application will not be felt until 1938. (G. A. Ro.)

Fox Photos]

THE TOTON SIDINGS (NOTTS) OF THE L.M.S. RY., THE LARGEST MINERAL MARSHALLING CENTRE IN THE WORLD—IT HAS 58 MILES OF SIDINGS AND DEALS WITH 9,000 COAL WAGONS A DAY

COAL: WORLD PRODUCTION. Of the various grades of coal produced, anthracite, which is rich in carbon, low in volatile matter, and geologically of the Carboniferous period (*see Ency. Brit.*, vol. 5, pp. 868 *et seq.*), is of the highest 'rank', but the least plentiful; while lignite, which is soft, high in ash and moisture, and geologically of the Secondary and Tertiary eras, is generally of a low grade, but is far more abundantly distributed, the estimated coal reserves known to the world to-day being of the following order:

Anthracite . . .	500,000 million tons
Bituminous . . .	4,000,000 million tons
Lignite . . .	8,000,000 million tons

In Great Britain, and many of the larger coal-producing countries, the coal is mainly Carboniferous, of high 'rank' as determined by calorific values. On the other hand, Germany, Russia, central Europe, North America, British India, South Africa, and Victoria contain large deposits of a younger age than the Carboniferous.

The superficial extent of the coal areas of the world has been estimated at 605,000 square miles, or in the ratio of 1 to 110 of the land surface of the globe, about one-third belonging to formations newer than Carboniferous. Coal is found in all latitudes between Spitzbergen and the Antarctic Continent, and is of better quality as a whole in the Old World than in the New; also coal of the northern hemisphere is superior to that of the southern.[1]

Principal Coalfields of the World: United States of America.—The United States is the largest producer of anthracite and bituminous coal in the world, but Germany is the leading producer of lignite. Although the U.S.A. contains a larger amount of high rank coal than any other country, its reserves of anthracite are relatively small. Coal is mined in 39 States, but practically all the anthracite comes from a small district in northern Pennsylvania. The bituminous coal is found east of the Mississippi River, and low-grade lignites in the northern Great Plains and Gulf provinces, while comparatively little coal is found on the Pacific coast. The U.S.A. produces annually between 400 and 450 million tons, of which only some 11 million tons are exported, the majority going to Canada. Unfortunately for the U.S.A., the coalfields are all situated at a considerable distance from the shipping ports.

[1] Walcot Gibson, *Coal in Great Britain*.

Germany.—Germany, whose known coal reserves are the largest in Europe, is the world's second largest producer of coal, including lignite, and the largest producer of lignite itself. The bituminous coal districts of Germany are mainly in the Rhine provinces; the Saar district is close to the iron-ore deposits of Germany and France, the Rhine districts are in the heart of industrial Germany, while the output of Upper Silesia, the second most important field, is used both internally and for export. Lignite, which is extensively mined in Central Prussia, is dried before use, and a large portion briqueted.

The German output is of the order of 300 million tons per annum, half of which is lignite, and 20 to 25 million tons is exported to France and other European continental countries.

The United Kingdom.—The United Kingdom is the second largest producer of coal in Europe and the largest exporter in the world. The grades of coal mined are all of the highest quality, and the British anthracite, gas, and coking coals comprise the finest examples of their type in the world. The coalfields are distributed throughout the Kingdom, and in many cases are situated in close proximity to the shipping ports, which greatly assists the export trade.

The annual output of coal in Great Britain is some 240 million tons, of which 40 million tons are exported, mostly to the continent of Europe and South America (*see* Coal Industry).

U.S.S.R. (Russia).—The production of coal in the Union of Soviet Socialist Republics has shown an increase unparalleled among the world's larger coal producers. The largest producing coalfield is the Donets basin of the south-eastern Ukraine, which is well equipped with railroads and readily accessible to the Black Sea, and provides about 75 per cent. of the coal mined in the U.S.S.R. Both anthracite and bituminous coal are produced. An extensive lignite deposit is being developed south and west of Moscow to supply the industrial needs of that centre. One of the largest coal deposits in the world is situated in Central Siberia, the Kuznetsk basin, but it has not yet been developed to any great extent.

It is in the Don basin that the 'Stakhanovite movement' originated a few years ago. This movement, in spite of all that has been written about it, is merely an example of vertical rationalization under extremely good conditions. It is an example of team-work, in which all the credit is given to the leader of the team.

France.—France, though a large producer, is short of coal, and is therefore also a large importer. The most important coalfield is that of the Pas de Calais, centred round Valenciennes, Mons, and Lens. During the War, 1914–1918, this coalfield was occupied by the Germans, and at the end of the War they destroyed the mines. As part of the reparation payment, the mines were re-equipped and are now modernized. There are a number of other coalfields, but the coal generally is of a low rank.

Poland.—The main Polish coalfield borders on Silesia, and was ceded to Poland at the end of the War. The field has been extensively worked and, by reason of the Polish Corridor and State-subsidized railways, Polish coal has become a serious competitor with the older coal-exporting countries, especially in countries bordering on the Baltic Sea.

Japan.—Japan is a large consumer of coal, but is none too well provided with commercial deposits. There are, however, large deposits in Manchuria, especially at Fushun, which are controlled by the South Manchurian Railway and subject to Japanese influence.

China.—China possesses many coalfields, in fact one at least in every province, but, as yet, they have not been properly exploited. There are large lignite deposits in Korea.

South Africa.—There are extensive coalfields in Natal, the Transvaal, and Southern Rhodesia. The Transvaal fields are in close proximity to the Witwatersrand goldfield; in fact, some of the present gold-mines in the East Rand are situated on the site of old coal-mines. The main field at Witbank is 100 miles from Johannesburg. The Southern Rhodesian coalfield at Wankie has co-operated very materially in developing the copper-fields of Northern Rhodesia.

Australia.—The most important coalfield in Australia is in New South Wales, and centres round Newcastle. A large lignite deposit is being worked in Victoria.

Conclusion.—It will be gathered from this short review that supplies of coal are available over a wide area of the earth's surface, but it will also be noted that the most progressive countries to-day are those possessing ample resources of coal which are being extensively exploited.

Coal Production of the World

(*Including Lignite and Brown Coal*)

	Long Tons (Millions)			
	1929	1931	1936	1937*
United Kingdom	258·00	219·00	228·00	240·00
Irish Free State	0·11	0·12	0·12	0·12
Nigeria	—	—	0·29	0·29
Southern Rhodesia	1·10	0·60	0·69	0·72
Union of South Africa	13·10	11·00	14·60	15·24
Canada	15·90	11·00	13·50	13·59
Federated Malay States	0·70	0·41	0·50	0·50
India	24·00	22·00	23·00	23·16
Australia	13·00	11·90	14·30	15·00
New Zealand	1·20	1·20	2·10	2·20
Austria	3·70	3·20	3·10	3·50
Belgium	30·00	30·00	27·00	30·40
Bulgaria	1·60	1·50	1·60	2·60
Czechoslovakia	39·00	31·00	28·00	34·92
France	55·00	51·00	46·00	45·10
Germany	342·00	263·60	315·00	360·70
Hungary	7·80	6·70	7·80	8·00
Italy	1·05	0·60	1·50	—
Netherlands	11·76	13·10	12·70	13·50
Poland	46·00	38·30	29·30	35·35
Rumania	3·00	1·90	1·90	—
Spain	7·50	7·40	7·00 (1935)	—
Spitzbergen	0·25	0·43	0·75	0·77
Sweden	0·39	0·50	0·50	0·60
U.S.S.R.	40·30	56·60	120·00	121·90
Yugoslavia	5·60	4·90	4·30	4·50
Mexico	1·10	0·90	1·30	1·40
United States	542·00	400·00	436·00	487·00
Chile	1·50	1·10	1·80	1·90
Turkey	1·40	1·60	2·30	2·50
China	15·00	18·00	14·00	—
Formosa	1·50	1·60	1·60	1·60
French Indo-China	1·97	1·72	2·25	2·25
Japan	34·00	28·00	37·50	40·00
Manchukuo	10·00	9·00	12·00	12·00

* All figures for 1937 are estimated from figures obtained for the first nine months of the year.

(J. A. S. R.)

P. B. Redmayne, A.R.Ps.]

COCOA. EACH TREE YIELDS ABOUT TWENTY PODS WHICH WHEN RIPE ARE A BRIGHT YELLOW.

COCHIN-CHINA : *see* French Indo-China.

COCOA (cacao). The outstanding development in the cocoa industry of recent years has been the great development of the comparatively cheap sources of supply in West Africa. In 1936, the export from the Gold Coast Colony reached a record total of 311,000 tons, exceeding by 60,000 tons the total world export in 1913, and forming 45 per cent. of the world total for 1936. During 1937, however, world cocoa prices dropped almost continuously to so low a level that the result, in November, was a concerted movement of Gold Coast and Togoland growers to withhold the remainder of the 1937–38 crop until prices improved. This policy was firmly maintained through November and December, and promised to extend well into 1938, with reluctance of Brazilian growers to sell reflecting a similar attitude.

The reports for Nov. 1 of the International Institute of Agriculture indicate that Gold Coast and Togoland production, which is harvested through the seven months of August to February, was as follows : Ashanti, 11,300,000lb. marketed, 42,600,000lb. in farmers' hands. Western Province, 2,700,000lb. sold, 4,900,000lb. withheld. Central Province, 8,500,000lb. sold, 18,600,000lb. withheld. Eastern Province, 33,600,000lb. sold, 42,600,000lb. in farmers' hands. Trans-Volta, 3,600,000lb. sold, 4,300,000lb. withheld. The 1937–38 production in Brazil was estimated by the Cacao Institute of Bahia as 2,646,000 centals. Haitian exports for the current year were 31,600 centals, compared with 36,200 the previous season. No comprehensive figures are available for Nigeria, Surinan, and Trinidad.

COCONUTS : *see* Vegetable Oils and Oilseeds.

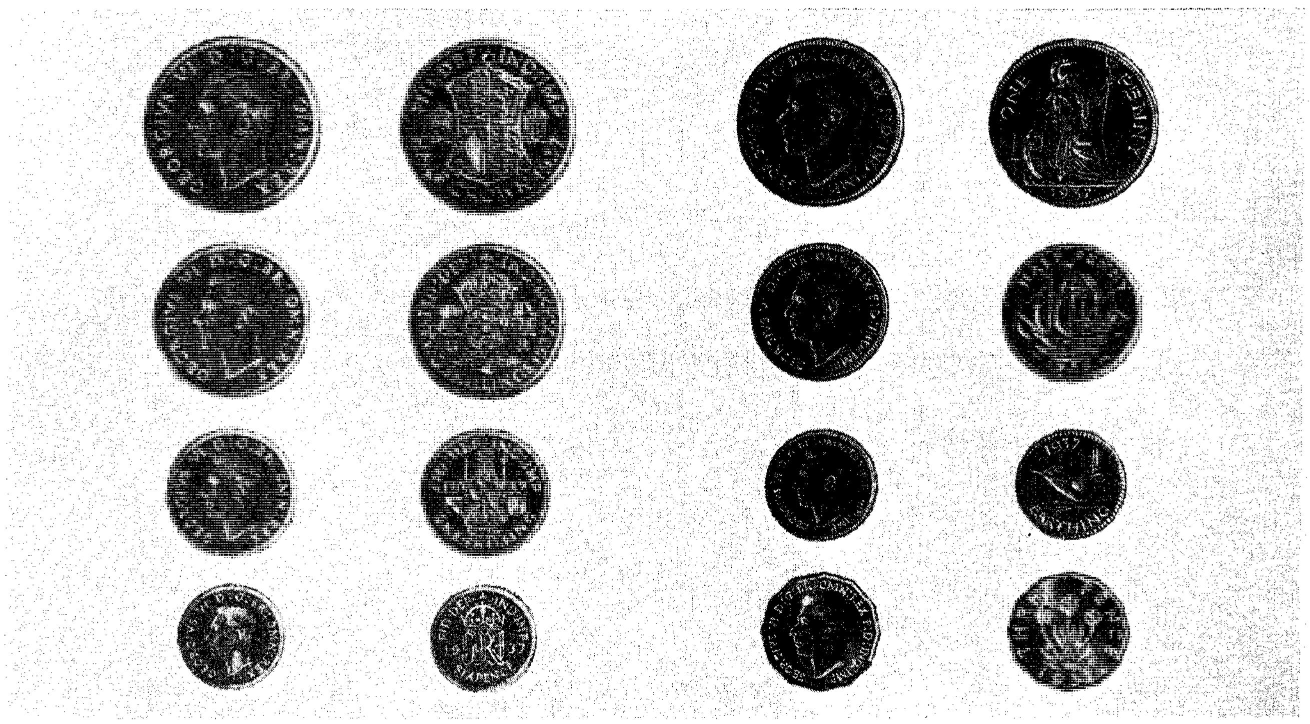
COFFEE. Overproduction continued during 1937 to be the great problem of coffee growers. On July 1 there was a carry-over estimated at 30,451,000 bags of 132lb. to the bag. Of this, 28,069,000 bags were Brazilian coffee and 2,382,000 were from other countries, a total only slightly less than the peak world carry-over of 1932. This supply, together with the current crop of 25,462,000 bags in Brazil and 11,500,000 in other countries, gave a total world supply for 1938 estimated at 67,413,000 bags, of which 53,531,000 bags were Brazilian and 13,882,000 the product of other countries. In the last five years, world consumption of coffee has averaged about 24,100,000 bags a year. In August, Latin American coffee-growing countries joined in a conference in Havana, Cuba, seeking ways to regulate production and distribution, but no agreement was reached. In May, the Brazilian Government's ' coffee defence ', or ' coffee valorization ' measures provided that 30 per cent. of the 1937–38 crop should be bought by the government at 1*s.* 3*d.* a bag and destroyed. The government issued 500,000 contos (£5,726,400) to finance this procedure. It was also decreed that 30 per cent. of the crop should be exported and the remaining 40 per cent. purchased by the government at 3*s.* and stored to keep it off the immediate market. In November, President Vargas reduced Brazil's export tax on coffee from 8*s.* 6*d.* to 3*s.* a bag, and the State of São Paulo reduced its transportation tax on coffee from 1*s.* 9*d.* to 1*s.* a bag. These measures were part of a procedure designed to maintain home prices as well as assist in foreign marketing. Since the first governmental activities in ' coffee defence ' in 1906, Brazil has financed these efforts in different ways, by export taxes, borrowing, and issuing currency. These activities through about 30 years constitute the longest period of a government's activities in regulating the marketing of a major agricultural product.

Between 1931 and July 1, 1937, Brazil destroyed 47,961,000 bags of coffee, chiefly the lower grades. Most of this was piled in heaps and burned. Some effort has been made to convert coffee into fuel for industrial and power plants by mixing it with tar and pressing it into bricks. In four of the last nine years the Brazilian crop has been larger than the entire world's annual consumption of coffee. (*See* also Guatemala.)

COINS. No British coins were struck bearing the effigy of Edward VIII, though perforated bronze and nickel-bronze coins with his superscription were struck for British West Africa, East Africa, Fiji, and New Guinea. A new series of British coins, after designs by Mr. H. Paget, Mr. George Kruger Grey, Mr. H. Wilson Parker, and Miss M. Kitchener, was authorized in March 1937, the obverses showing the new King's head facing left, with the inscription GEORGIVS VI D : G : BR : OMN : REX ; the reverses are shown in the accompanying illustration. The set included a twelve-sided threepenny piece in a nickel alloy used for the first time in British coinage.

The total output of the Royal Mint was expected to reach the record figure of 400 million pieces in 1937, over £60 millions' worth of new silver coins having been minted since 1920 to replace older coins of higher silver content. An increased demand for bronze coin led to the issue of £368,000 worth of pennies in the last three months of 1936, in January of which year about four shillings' worth of bronze coin was already in circulation for every member of the population. The London Passenger Transport Board alone receives over 6,000 tons of bronze coin annually.

The total number of coins struck in the Royal Mint in 1936 was 334,061,665, of which 110,864,343 were for the Dominions and Colonies, and 4,500,000 for foreign countries.



Fox Photos]

NEW ENGLISH COINS FOR 1937; THE FIRST ISSUE OF THE REIGN OF KING GEORGE VI SHOWING THE SIXPENCE, SHILLING, FLORIN, HALF CROWN, FARTHING, HALFPENNY, PENNY AND POLYGONAL THREEPENNY PIECE, OBVERSE AND REVERSE SIDES

THE KING'S HEAD FACES THE SAME WAY AS HIS FATHER'S, ALTHOUGH NO BRITISH COINS WERE STRUCK BEARING THE EFFIGY OF EDWARD VIII

A crown piece was issued for the first time in Australia on Coronation Day, 1937.

In December the Turkish Treasury decided to mint and circulate gold pounds to stabilize the value of the Turkish pound. (*See* also VATICAN.)

COKE. The production of coke centres in the more heavily industrialized countries, particularly those with a large pig-iron output. World production dropped from 144,500,000 metric tons in 1929 to 79,500,000 tons in 1932, recovering to 116 million tons in 1935, the last year for which complete data are available, and to an estimated 141 million tons in 1936. In 1935, the distribution was: United States, 28 per cent.; Germany, 25 per cent.; Soviet Union, 14 per cent.; United Kingdom, 10 per cent.; France, 6 per cent.; Belgium, 4 per cent.; Netherlands, 2 per cent.; India, Canada, Czechoslovakia, and Poland, 6 per cent.; leaving 5 per cent. for various minor producers. Increases in production in 1937 were heaviest in the United States, Germany, the Soviet Union, and the United Kingdom. Although the German pig-iron production is less than half that of the United States, its coke output, including that of the Saar, is almost as great; part of this difference is explained by heavy German exports of coke, which amount to about 20 per cent. of the output. British exports also take about 20 per cent. of the local production.

COLD, COMMON. Kerr selected individuals free from but known to have frequent attacks of the common cold, and exposed them to patients in the acute stages. Of a total of 19 subjects exposed in five groups, not one positive result was obtained. This observation suggests that some colds are not so readily transmitted as is often asserted. Observations by Charlton suggested that people are greatly influenced by climate in their ability to resist infections of the upper respiratory system. Thus persons working in laundries with high temperature and moist heat seem relatively resistant. Furthermore, the individual sufferer from colds between October and April has an altered vasomotor reaction of the upper respiratory mucosa to thermal stimuli applied to the skin. Allergy has been discussed as a causative factor, and the virusaetiology of some colds has received further study.

The attempted prevention of colds has been concentrated particularly on the alleged effectiveness of vaccines. Rockwell and Van Kirk have continued their studies on the relation of heterophile immunity and the incidence of colds, especially as applied to administration by mouth. The results of administration in this manner have been, they believe, successful in reducing both the incidence and the period of invalidity. Toomey among others, however, has seriously questioned the value of attempted immunization either by this means or by the perhaps more commonly employed injection method. A five-year study of the value of cod-liver oil in reducing industrial absenteeism caused by colds and respiratory diseases concluded that the cod-liver oil groups were absent materially less time than the control groups. This view has not, however, been generally accepted.

Rest in bed, according to Le Blanc and Welborn, instituted with relative promptness, seemed to have some effect in reducing the incidence of complications from colds in nurses. There was a difference in favour of this group as compared with another group for whom rest in bed was delayed, in days off-duty, days in the hospital, and length of illness. Complications were more than five times as frequent in the delayed group as in the other. Inhalations of sulphur dioxide gas were found useful during the early stages of an infection. Deep inhalations, however, are not necessary, and tend to make the patient cough. In a group of patients treated orally with ephedrine sulphate and amytal early in the course of a common cold, improvement was noted in 83 per cent. as compared with 26 per cent. of the control group receiving capsules of milk sugar. (E. P. J.)

COLIJN, HENDRICK (1869–), Dutch statesman, born at Haarlemmer Meer, took up politics as a member of the Anti-Revolutionary (Catholic and Conservative) Party in 1909, becoming its leader in 1922. From 1925 to 1926 he was premier, and has held that office continuously since 1933. On Jan. 11, 1937, Dr. Colijn appealed for close co-operation between the democratic States in the interests of world peace and economic stability, suggesting that the Oslo Powers should confer on measures for increasing mutual trade; and such a conference was held at The Hague in March. At the end of February, explaining Holland's defence plans, he stated that she 'must be able to defend herself so as to make her worthy of the help of others'. In April, he attended the International Sugar Conference in London, returning to Holland to prepare for the general election of May 26, in which, supported by the Liberals against the growing Dutch National Socialist Party, he secured a great electoral success, his own party increasing its vote by some 40 per cent. On June 23, he formed his fourth cabinet, from his own party, the Christian Historical Party, and the Catholics, no Liberals accepting office. After the election he had stated: 'Our people have called a halt to Nazism. . . . I am in favour of a strong State authority, but with due respect for the people's freedom'.

COLOMBIA, a republic in northern South America, bordering both the Pacific and the Caribbean; capital, Bogotá; president, Alfonso López; area 440,846sq.m. Population, third largest in South America, 7,851,000 (1926 census); (est. 1935) 8,580,000. The leading cities are: Bogotá (222,467); Barranquilla (180,000), Medellin (140,000). The official language is Spanish.

History.—Colombia is one of the most rapidly advancing countries of Hispanic America. During 1937, the progressive trend which marked the administration of President López in previous years was continued, with educational improvement and the furthering of social legislation. Political developments centred largely upon a struggle between the left and right wings of the dominant Liberal Party for control of the party organization, and through it the nomination of a successor to President López, whose term expires in 1938. The minority Conservative Party continued its policy of abstention from voting. The congress elections held on April 6, gave the right-wing Liberals, led by Eduardo Santos, a decided majority in the house of representatives; and in July the Liberal Party convention nominated Santos for the presidency.

Meanwhile, in May, obligatory workmen's insurance had become law, but the suggested government participation in the banana industry, and peso devaluation faced such determined congressional opposition and hostility that President López formally tendered his resignation which was, however, refused. Late in the year an acrimonious dispute between the Church and the government came to a head, with the archbishop of Bogotá protesting against the scientific teaching fostered by the ministry of education.

Colombia's financial and economic state showed considerable improvement during 1937. As a result efforts were made to arrange resumption of payment on dollar bonds in default since 1930. The condition of the world coffee market at the close of the year, however, left a note of uncertainty, due to the changes in Brazilian coffee policy.

Trade and Communication.—Colombia has external communication by sea through Barranquilla and other ports, with a well-developed air transport service. There are 1,400m. of railways and some 5,000m. of roads with a programme of road extension under way. In 1936, imports (largely textiles and other manufactured goods) were 120,036,874 pesos from the United States (41 per cent.), Germany (22·4 per cent.), Great Britain (18·8 per cent.); exports were 136,844,451 pesos (not including 20,787,792 pesos of gold), to the United States (54·3 per cent.), Germany (16·6 per cent.), and Curaçao (11 per cent.). Coffee constituted 67·3 per cent. of the total exports, petroleum 10·6 per cent., bananas 6 per cent.

Agriculture, Manufactures, Mineral Production.—In addition to the principal export crops, coffee and bananas, Colombia produces sugar, wheat, rice, cotton, cacao, and tobacco, chiefly for domestic consumption. The pastoral industry annually produces some 3 million pesos value of hides for export. Mineral resources are extensive, Colombia ranking ninth in the world production of petroleum, second in platinum, and first in emeralds. Gold production is heavy. Valuable but undeveloped copper and coal deposits are available. Enormous undeveloped timber resources exist. Manufacturing for domestic consumption has advanced 50 to 80 per cent. since the protective tariff was imposed in 1931, with 300,000 skilled and unskilled labourers employed in producing ice, sugar, cement, tobacco, flour, and other commodities.

Banking and Finance.—The monetary unit is the peso (approximately 2s.). In 1936, revenues were 74,186,038.25 pesos, and expenditures 68,337,870.85 pesos. The national budget for 1937 was £8,951,690.

Education.—In 1936 there were 8,459 primary schools (enrolment, 553,706), largely supported by the national government, and 438 secondary schools (enrolment, 31,122), about 80 per cent privately owned (government-aided). The national budget allotted 8·5 per cent. to education. The government policy was for increasingly close government supervision of all schools and a gradual improvement of educational conditions. In Jan. 1937 a system of seniority and minimum pay for teachers was inaugurated. There are universities at Bogotá and Medellin. (L. W. BE.)

COLORADO: *see* UNITED STATES OF AMERICA.

COMINTERN: *see* INTERNATIONAL.

COMMITTEE FOR INDUSTRIAL ORGANIZATION, a loose federation of labour unions in the United States and Canada, headed by John L. Lewis (*q.v.*), president of the United Mine Workers of America.

The C.I.O. was formed on Nov. 9, 1935, by representatives of eight international unions affiliated to the American Federation of Labor to promote the development of industrial unions within the American Federation of Labor. They announced their purpose to encourage and promote organization of workers in the mass-production and unorganized industries of the nation.

Unwilling to yield any of their membership or potential membership to industrial unions, the American Federation of Labor craft union leaders, on Sept. 5, 1936, found the unions backing the C.I.O. guilty of 'insurrection' and suspended them from the Federation. The C.I.O. has developed as an independent labour movement since that time. On its second birthday, it reported a total membership of approximately 4 millions in 32 national and international unions, and 600 directly affiliated local unions.

The first objective of the C.I.O. was to organize the employees in the mass-production industries, such as steel, automobiles, and rubber, into industrial unions. It took over three weak American Federation of Labor unions in those fields, and started an intensive organization campaign in the autumn of 1936. Twelve months later the C.I.O.

reported that the membership of the Amalgamated Association of Iron, Steel, and Tin Workers had grown from approximately 10,000 to more than 500,000; the United Automobile Workers from 30,000 to 375,000; and the United Rubber Workers from 25,000 to 75,000. By means of ' sit-down ' strikes, the C.I.O. won for the automobile workers' union the first written labour agreements which two of the largest motor makers in the country had ever granted. In steel, the C.I.O.'s outstanding victory was a written agreement with the United States Steel Corporation.

Throughout its earlier development, the C.I.O. was financed by contributions from its stronger and wealthier member unions. In the summer of 1937, it levied a *per capita* tax of five cents a month on each member of its affiliated unions.

COMMODITY PRICES: *see* PRICES, STATISTICS OF.

COMMUNISM. Communism is now generally understood to be that form of Marxianism, resting on revolution and the dictatorship of the proletariat, which triumphed in Russia after the Bolshevik revolution in the autumn of 1917, and has since been gradually developed in the course of the last 20 years. In that sense Communism represents revolutionary Socialism, hostile to the slow process of gradual reform and progressive compromise; and it stands in contrast to the ' reformist ' Socialism which makes its peace with parliamentary institutions and is willing to proceed by successive stages of change. In another sense, and from another point of view, a distinction has lately been drawn by Stalin and his followers between Communism and Socialism. In this sense, and from this point of view, Communism is not a peculiar and revolutionary form of Socialism: it is something *sui generis*. It is the ultimate goal, not yet reached in Russia, which can only be attained after a previous and experimental phase of Socialism, which Russia is now supposed to be traversing. On this basis, a Socialist society, such as now exists in Russia, is one in which all are necessarily workers, but each receives a different reward for his work, according to the amount which he has done. A Communist society, which has still to be instituted in the future, will be one in which all work, and each will receive a reward for his work proportionate to his needs. The use of general political terms is often fluctuating; but it seems permissible, in spite of Stalin's recent refinement, to apply the term Communism to the system of society and government which now exists in Russia, and which has recently been clarified and defined in the new Russian constitution adopted in 1936.

We may therefore say that Communism means a system of society and government, achieved by the overthrow of landlordism and capitalism and by the institution of the dictatorship of the proletariat (which primarily consists of the urban artisans), such that the economic basis is a Socialist system of economy and Socialist ownership of the means of production, and such, again, that the political basis is the toilers of towns and villages represented by and acting through their deputies. This, at any rate, is the theory. In practice, the Communist State—similar in this respect to the Fascist—finds its political basis in a single party (a party with nearly three millions of adherents), which manipulates social and political institutions, and which itself is manipulated by its own central bureau and the secretary of that bureau.

On the economic side, as it stands at present, Russia is by no means pledged to an absolute and unqualified system of State-ownership. In effect, its economy is what may be called a mixed economy. There is a large measure of State-ownership (both of land and of factories); there is a considerable amount of co-operative or collective ownership (both in respect of agriculture and in respect of industry) by voluntary groups or associations; and alongside this Socialist system of economy, in which the State or the association is the owner, there is also what is called the ' small private economy ' of individual peasants and craftsmen, based on their own individual stock and labour. Under this mixed economy there is a large and developed system of trade unionism among producers, and another and developed system of co-operative societies among consumers. The State is not all in all: it admits by its side (if under the tutelage of the Communist party, to which it is also subject itself) a trade union and a co-operative movement. Under the same system of a mixed economy there is also, as already suggested, a system of different incomes: the workers are largely paid by piece-work rates, and managerial and administrative posts carry higher salaries. The divergence of Russia from so-called capitalistic States may be easily exaggerated. On the other hand, it must be said that in one respect the State goes farther in Russia than in other countries. It furnishes a larger amount of what may be called collective amenities (free education, health-service, holiday facilities, provision for amusement) which are enjoyed equally by all alike. The equality of this enjoyment may be set over against inequality of remuneration.

On the political side Russia seems to have changed greatly (at any rate in form) during recent years. The ultimate power still resides in the Communist party and its bureau. But there is less of the rule of arbitrary discretion (or ' revolutionary legality ') and more of an attempt to institute the rule of law. The new constitution of 1936 is an attempt to bring Russia—again it must be said ' at any rate in form '—into line with the principles and practice of parliamentary democracy. A directly elected parliament (or ' supreme council '), and a removal of disfranchisement, are part of this attempt. In another respect, too, Russia seems to have changed. Twenty years ago Russian Communism sought to capture the world. It recognized no territorial limits: its theory was one of the subversion of all States and the institution of a single universal workers' republic. To-day Russia is apparently a territorial State, with a national basis. But there is a sense in which, the more it changes, the more Russia remains the same. There is still the old tsarism, if now it is semi-veiled dictatorship; and there are still cleansings and purges and proscriptions.

On Russian Communism the great work is the Webbs' book on *Soviet Communism*. The second edition contains, in an appendix to the first volume, a translation of the text of the new Russian constitution. Lenin's pamphlet on *The State and Revolution*, published in 1917, contains a statement of the principles and organization of Communism which still deserves to be read. (E. B.)

COMMUNIST PARTY, THE. The world organization of Marxist Socialists operates through branch national parties very loosely affiliated to the Communist International (*see* INTERNATIONAL), or ' Comintern '. In 1936 an ' Anti-Communist Pact ' was formed by Germany and Japan, and in Nov. 1937 this was joined by Italy.

In 1937, the party in Russia underwent an extensive purge, resulting in the disappearance of such noted figures as Bukharin and Rykov (*qq.v.*); in March, a reform of the party constitution and a democratization of its organization, with secret ballot voting on party questions, was announced.

At its annual conference at Montreuil in January, the membership of the French Communist Party was given as over 280,000 ; M. Thorez, the leader, reaffirmed the party's loyalty to the *Front Populaire*, and general support of the Blum and Chautemps governments continued throughout the year, though the Communists did not enter the government.

In Great Britain the only noteworthy electoral success in 1937 was the return in November of the first Communist member to a London Borough Council in the Spitalfields East ward of Stepney. Attempts to form a 'United Front' with the Labour Party were pursued, as the result of a resolution of the party conference in January ; and at elections the party generally continued to support official Labour candidates, frequently causing embarrassment to the latter thereby ; but the Labour Party in conference in May renewed their decision not to permit Communist affiliation, and the disbandment in June of Sir Stafford Cripps's Socialist League marked the effective end of the United Front. The party membership, though some increase took place, did not exceed 10,000.

COMMUNITY SCHOOLS : *see* Village Colleges and Community Schools.

CONFECTIONERY. Flippantly described only a few decades ago as the 'lollipop' trade, the chocolate and confectionery industry has reached considerable proportions, not only in Great Britain and the United States of America, but also in many of the British Dominions. The industry covers chocolate and a wide variety of cocoa preparations, whilst sugar confectionery (candy) covers a wide range of goods, from hard lozenges to toffee and chewing gum. Sugar confectionery is quite separate from flour confectionery, which is the product of the baker.

The most striking development recently has been in the direction of the improved packing of the goods, most of the sweets now being wrapped individually and presented in boxes, bottles, or other packs. On the mechanical side great progress has been made during the last year or two in wrapping machinery, particularly in the direction of greater outputs per machine and per person employed.

The principal countries of manufacture are the United States, Great Britain, Switzerland, France, Germany, and the larger British Dominions. The consumption per head is greatest in Great Britain, where the output on a retail basis is valued at over £50 millions ($250 millions) per annum. The fifth Census of Production (1935) showed a value of the output at the factories as £36,322,000 ($181,610,000). In the United States the output in 1936 for 146 manufacturers (according to the Foodstuffs Division of the Department of Commerce) was $125,881,230 (£25,176,246).

Over one million people are employed in the manufacture and distribution of chocolate and confectionery, the ingredients of which come from every quarter of the world. Numerous other industries, such as machinery manufacturers, producers of essences and essential oils, glucose (maize syrup), and box manufacturers find in the chocolate and confectionery industry a wide outlet for their goods.

(A. E. Wi.)

CONFUCIANISM, the term applied to the ethical teachings and rites associated with the name of the famous Chinese sage Confucius (traditional dates, 551–479 B.C.). Confucianism is a system of morality rather than a religion in the ordinary sense of the term. The five major Confucian virtues are filial piety, love, wisdom, reverence, and sincerity. Although Confucianism underwent some vicissitudes of court favour, and was modified by the impact of Buddhism, it acquired the status of a Chinese State religion, and has exercised a profound influence on Chinese national thought and social development. The emphasis which the sage placed upon filial piety has helped to place the centre of Chinese loyalty in the family, rather than in the State ; and this trend is being changed only slowly under the influence of the western conception of nationalism. Official patronage of Confucianism ceased after the estabment of the republic in 1911, and from this time it took its place as a matter of private faith. Some Chinese modern thinkers are inclined to criticize Confucianism as a spiritual obstacle to the achievement of modern reforms. Confucian ideas and practices are encouraged in Manchukuo and in North China since the Japanese occupation ; and the teachings of Confucius and other ancient philosophers have been reintroduced into the schools of North China after the change of regime there. Confucianists are more numerous than any other non-Christians and even outnumber the adherents of the Roman Catholic Church. Of the estimated 350,600,000 Confucianists, 350 million are residents of Asia (almost all of China), the remainder of North America.

(W. H. Ch.)

CONGO, BELGIAN : *see* Belgian Congo.

CONGREGATIONAL CHURCHES. In the year 1937 the Congregational Union of England and Wales possessed a membership of 424,774, showing a decrease of 7,589 on the total for 1936. There are 4,465 places of worship (including 1,017 in the Union of Welsh Independents) ; Sunday School pupils total 395,060, being 23,996 fewer than in the previous year.

The Congregational Union of Scotland has 175 places of worship and a membership of 40,546 ; the Congregational Union of Ireland 78 and 2,170 respectively. International Congregationalism has 69,066 members in Africa ; 21,611 in Australia and New Zealand ; 30,580 in China and 48,582 in India and Ceylon.

During 1937, in England and Wales, six new churches have been opened and 11 new churches are in course of building or contemplated.

The 105th assembly of the Union was held in London in May when the Rev. E. J. Price, principal of the Yorkshire United Independent College, Bradford, occupied the chair. As chairman of the Union of England and Wales Mr. Price was present at the Coronation ceremony in Westminster Abbey.

The chairman's address dealt with the subject 'The Churches, the Ministry and the Colleges'. Special tribute was paid to Dr. J. D. Jones, who was then about to retire from the ministry of Richmond Hill Church, Bournemouth, after a pastorate of nearly 40 years. Dr. Jones had been twice elected chairman of the Congregational Union of England and Wales and has been since 1930 Moderator of the International Congregational Council.

The 97th autumn assembly was held at Bristol in October, when a resolution was passed that : 'This Assembly views with alarm the rapid spread of clubs which are free from the licensing restrictions of the public house and lack proper supervision'.

All churches in the Union have been asked specially to observe Sunday, June 19, 1938, as the fourth centenary of the Reformation and of the royal command that a copy of the English Bible should be placed in every English church. Further conversations were held during the year between representative Presbyterians and Congregationalists with a view to closer co-operation.

The Rev. R. W. Thompson, Bristol, was elected chairman of the Union of England and Wales, 1938–39.

United States.—During the year 1937 this denomination's numerical strength in the United States was increased to a total of 1,030,029. Additions to its membership for the year 1936 were 55,659, registering a net gain of 1,991. The number of churches throughout the United States numbered 6,153 on Jan. 1, 1937. During the year 1937, the denomination proceeded further in the unifying of its organized boards, bringing together in one Board of Home Missions all of the societies dealing with home missions, education, ministerial relief, negro education, and publishing. The American Board of Commissioners for Foreign Missions, the foreign board of the denomination, continues as a separate unit. These boards received during the year 1936 a total of $2,114,954, of which more than three-fourths was from living givers, the balance being derived from endowments and legacies. The American board, operating under other flags, has had its special problems in the Far East. Its missionaries in China have continued their work with slight interruption, only one school having been closed as a result of the war with Japan. Its missionaries in Japan also have continued to work, although faced with the growing nationalism of Japan which threatens an end to all foreign influences. The biennial General Council of the denomination will be held at Beloit, Wisconsin, in June 1938. The denominational headquarters are at 287 Fourth Avenue, New York. Dr. Charles E. Burton is the general secretary.

CONGRESS, UNITED STATES. The first session of the 75th Congress of the United States began, as provided by the 20th Amendment of the Constitution (Feb. 6, 1933), on Jan. 3, 1937, and ended on Aug. 21. The composition of the two Houses was as follows: Senate—Democrats 76, Republicans 16, Independent 1; House of Representatives—Democrats 328, Republicans 90, Independents 13, Vacant 4. The presiding officer of the Senate is, *ex officio*, the vice-president of the United States, John N. Garner of Texas; and the president *pro tem.* is Key Pittman of Nevada. The Speaker of the House of Representatives is William B. Bankhead of Alabama.

In spite of the large Democratic majority in both Houses, considerable opposition was shown during the session to the proposed New Deal legislation, and little more than a fifth of the President's legislative programme was actually enacted; other New Deal measures were, however, placed on the preferred list for 1938. The chief measures passed by Congress were: the Wagner-Steagall Housing Act; the Farm Tenancy measure; the revised Guffey Coal Act; the Judicial Procedure Act; the Supreme Court Retirement Act; the Neutrality Act; the Sugar Quota Act; and amendments to the Tax Law.

CONNECTICUT: *see* UNITED STATES OF AMERICA.

CONNOR, RALPH: *see* GORDON, CHARLES WILLIAM.

CONSERVATIVE PARTY, THE. When in, 1931, the party, under the leadership of Lord (then Mr. Stanley) Baldwin, co-operated with representatives of the Liberal and Labour Parties in the formation of a National Government under the leadership of Mr. Ramsay MacDonald, the success of that government's efforts proved it to be possible for statesmen possessing an entirely different approach to politics to join together in applying a common mind to the nation's ills. Mr. Neville Chamberlain, the present premier, who leads the Conservative Party to-day, has set out the following as the guiding principles of the National Government and the Conservative Party: (1) to keep the peace; (2) to make Great Britain so strong that nobody shall treat her with anything but respect; (3) to maintain and increase the prosperity and activity of trade and employment; (4) to carry on steadily the improvement of the conditions of the people.

Throughout these years of international anxiety, the National Government has exerted supreme efforts to promote peace in the world. Where armed conflict has unfortunately taken place, Britain has consistently exerted its influence to localize the issue and so prevent it from involving other nations. The Conservative Party supports the government's endeavours to strengthen the authority of the League of Nations; to seek solutions of outstanding problems by means of economic and political collaboration; to restore faith in the integrity of treaties; and by strengthening the foundations for a common understanding to pave the way for a reduction in the burdens of armaments by means of international agreement. In particular, the party opposes the conception of rival ideologies and the grouping of powers into opposing *blocs* according to their different systems of government.

Pending an international agreement which will give all countries a greater sense of security, the Conservative Party is convinced that Great Britain must take the necessary steps to strengthen her defences in order to guarantee the safety of her world-wide communications and also enable her to fulfil her international obligations, holding that the present inadequacy of the system of collective security makes it all the more essential that Britain should repair the gaps in her defences which were caused by years of inactivity when she was striving by example to bring about international disarmament.

In its view of this question of peace and security, Conservative policy inevitably concerns itself with the position and attitude of the Empire. The Home Country is the connecting link between the various members of a great Commonwealth of Nations. They possess in common democratic government and a great and lasting love of liberty and justice. The influence they may exert as a factor in maintaining world peace cannot be exaggerated. Therefore, Conservatism holds that everything possible must be done to maintain and strengthen the ties which bind Britain and the Dominions together.

The policy of the Conservative Party with regard to domestic affairs may be stated with equal simplicity. It contends that the maintenance and enhancement of the industrial revival is dependent upon the increase and acceleration of Britain's already striking advance in social legislation, and that the recent improvement in the numbers of employed is based on the element of confidence, which in turn can be founded only on sound finance.

Where Conservatism remains, and will remain conservative, is in its rigid conception of the elementary economic laws. It holds that to saddle industries with burdens they are unable to bear is the road to neither good trade nor good government; and that real social improvements can come only as the accompaniments of real industrial improvements.

The annual conference of the party was held at Scarborough on Oct. 7 and 8, under the chairmanship of Mrs. Clara Fyfe. On the second day, a memorable speech was made by the prime minister, Mr. Chamberlain, in the course of which he made extensive reference to the whole international situation. (D. HA.)

CONTRACT BRIDGE. There was little advancement in the science of contract bridge bidding or play in 1937; no new legislation was effected; no significant competitions were played. In other years marked by the introduction of nothing generally interesting to adherents of the game, a consequent decrease in the amount of bridge-playing was noticeable. In 1937, according to all available evidence, no such decrease resulted. In Great Britain and the United States, indeed, a considerable increase was noted.

Statistics on which any gauge of the popularity of contract bridge is based are: (1) the number of playing cards sold, and (2) the number of books of bridge instruction sold. Manufacturers of playing cards report that sales in 1937 were approximately the same as in 1936. Publishers of books on contract bridge in 1937 exceeded their 1936 sales by more than 30 per cent.

The laws prepared by the Whist Club of New York, the Portland Club of London, and the Commission Française du Bridge of Paris in collaboration, which became effective on March 31, 1935, remained in force and were unchanged. These clubs announced that no change would be made before 1940. A different code of laws governs tournament bridge, and the right to make changes is not so restricted, though no immediate change is contemplated. In the United States and in nearly every country of Europe the tournament laws are promulgated by national associations which are members of the International Bridge League, but not all of the European countries have adopted wholly the code of tournament laws which was prepared by an American committee. However, this code was used by the International Bridge League at its tournament at Budapest in June 1937, in which 18 different national bridge associations were represented, an Austrian team winning the championship and an American team finishing second.

The methods of bidding which were generally adopted in 1935 remained substantially unchanged and grew in popularity. Their outstanding feature is that there are almost no artificial bidding conventions included. An artificial bid is one which reveals some specific holding of high cards or suit-lengths by the bidder, the true meaning of the bid having been previously explained to the bidder's partner and opponents. A natural bid is one which reveals only the bidder's willingness to play the hand for the number of tricks and at the trump suit named in the bid. Average players and nearly all advanced players prefer to use a bidding system which emphasizes natural bids. Various systems involving the use of artificial bids were popular in Great Britain and America four years ago, but have gradually been abandoned, until to-day they are seldom encountered in homes, clubs, and tournaments. The only artificial bidding convention which remains in general use is the '4-5 no-trump convention', with which aces are shown for slam-bidding purposes.

It is perhaps due to failure to make changes in laws and bidding methods that the popularity of contract bridge has been maintained. While bridge analysts were still experimenting with bidding methods, and made frequent changes in their bidding systems, the average player was frequently called upon to forget rules he had already learned and accept new rules. Many players, unwilling to undertake the expense and trouble of learning new methods, stopped playing the game. Now that they are secure in the belief that bidding methods have become largely standardized, they play more regularly. The total number of bridge players in the world, 66 per cent. of whom are in Great Britain and America, may be estimated at the close of 1937 as 29 millions. This is a higher figure than any authoritatively advanced before.

Bridge competition, from which championship titles and ranking of players must come, is better organized than in other years. In the United States, two factions which had been independently conducting championship tournaments united, and the resultant single organization, the American Contract Bridge League, is in a position to provide authentic championship titles and ranking of players. In Great Britain, two similar factions still oppose one another, calling themselves the British Bridge League and the National Bridge Association. Only the former is a member of the International Bridge League, but the fact that many of the best-known players are allied with the latter association leads to disputed national rankings. In other countries, the association which belongs to the International Bridge League is generally alone or predominant in the field. (E. Cul.)

CONWAY, WILLIAM MARTIN CONWAY, 1st Baron, of Allington, British mountaineer and art critic; born at Rochester, April 12, 1856; died April 19, 1937. For a biographical notice, *see Ency. Brit.*, vol. 6, p. 363. He was created a baron in 1931. His later publications included: *The Sport of Collecting*, 1914; *The Crowd in Peace and War*, 1916; *Mountain Memories*, 1920; *The Van Eycks and their Followers*, 1921; *Art Treasures of Soviet Russia*, 1925; *Episodes in a Varied Life*, 1932; *A Pilgrim's Quest for the Divine*, 1936. Lord Conway married in 1884, Katrina Lambard (*d.* 1933), and in 1934, Iva Lawson. A daughter by the former marriage survives him.

CO-OPERATIVE MOVEMENT, THE. Development of the British Co-operative movement intensified during 1937. Eleven hundred retail societies contain over 8 million members transacting an annual turnover of over 250 millions sterling, of which about 140 million is drawn from their wholesale societies, including 50 millions of actual manufactures of the Co-operative Wholesale Society or the Scottish Co-operative Wholesale Society. Some 350,000 workers are employed. The dividend returned to members averaged 10 per cent. of the sales.

Recent progress is particularly noteworthy in the south, south-west, the London area and the midlands, where co-operative trade formerly lagged behind. The industrial north is now vigorously extended and ramified. The ten-year plan (1934–44) of the Co-operative Union sets annual tasks of trade and membership for national and local units; the 1937 quotas were exceeded.

Problems of growth now being faced by the Co-operative movement include competition between retail and productive units. (The 1936 Co-operative Congress remitted the matter to a special inquiry.) Adequate disciplinary powers to ensure some minimum of uniformity have not yet been conceded by the basic societies. Consequently, serious overlapping of function and competition for trade is a contradiction of Co-operation in some parts of the country.

Fundamentally a consumer organization, the Co-operative movement often finds itself in conflict with the producers' boards marketing milk, bacon, pigs, and potatoes and similar bodies operating with legislative sanction to fix minimum prices and standard channels of distribution. Co-operative policy is the joint control of commodity marketing by producers and consumers on lines recommended by the Grigg and other commissions.

Opposition to the taxation of undistributed surpluses introduced by the 1933 Finance Act, which is regarded as a breach of the whole principle of mutuality, deepened in 1937 on the application of the National Defence Contribution to the societies' tax liability. In the House of Commons, Co-operative M.P.'s unsuccessfully claimed similar treatment to public utility companies (exempted from N.D.C.) or building societies (given preferential treatment).

The economic importance of co-operative trade, especially in the distributive sphere, is due to its supply of a large fraction of the nation's domestic needs and services. Recent increases in sales of milk, coal, laundry, and furniture services show the wider range of its operations. (E. T.)

COORG. This is a small hilly piece of British territory in southern India, adjoining Mysore State : area 1,593sq.m., and population 163,327, of whom 89 per cent. are Hindus. Kanarese and Kodagu (or Coorgi) are the languages. One-third of the total area is under forests ; the outstanding crop is coffee, which occupies over 40,000 acres ; otherwise rice grows easily in the damp temperate climate.

The British Resident in Mysore acts as chief commissioner of Coorg, and there is a legislative council of twenty.

COPPER. Nine copper-producing countries with outputs, present or past, in excess of 50,000 tons, accounted for 90 per cent. of the world total in 1929, and 88 per cent. in 1936. This is only a comparatively small change, but in the meantime there has been a radical change in the status of many of the individual producers. World output as a whole decreased by 53 per cent. between 1929 and 1932, increasing by 1936 to 87 per cent. of the 1929 high level ; of this total, production outside the United States dropped only 26 per cent., and recovered to 23 per cent. above 1929, while the United States output declined by 75 per cent., and recovered to only 60 per cent. ; as a result, the United States proportion of the total has decreased from 49 per cent. to 33 per cent. This change, however, has not been due to any physical inability to produce at the former rate, but to the general industrial depression, complicated by the discovery of rich new sources in Rhodesia and Canada, and the extension of Russian operations, all combining to divert from the United States a good share of its former export market. The United States is still the leading producer, with 33 per cent. of the total, followed by Chile with 15 per cent., Canada 12 per cent., Rhodesia 8 per cent., Belgian Congo 6 per cent., Soviet Union and Japan each 5 per cent., and Peru and Mexico each 2 per cent.

WORLD PRODUCTION OF COPPER
(In thousands of metric tons)

	1929	1932	1934	1935	1936
BELGIAN CONGO .	135·5	54·0	110·1	107·7	95·7
CANADA . .	109·9	113·7	166·4	188·9	186·1
CHILE . . .	316·8	105·2	256·7	267·1	256·0
JAPAN . .	75·5	71·9	67·0	69·4	78·6
MEXICO . .	78·7	34·1	47·3	41·6	32·6
PERU . . .	54·4	21·4	27·7	29·7	32·9
RHODESIA . .	5·9	73·0	145·6	148·2	140·0
U.S.S.R. . .	25·8	30·7	44·1	63·2	83·0
UNITED STATES .	931·1	231·8	217·8	344·8	557·9
WORLD TOTAL .	1,921·6	905·5	1,266·3	1,459·5	1,676·7

The Belgian Congo, Chile, and Peru have decreased in output, but so nearly in the same ratio in which world output has changed that the percentage of the total furnished by each has not been materially altered, and the same is true of Japan, with a slight increase ; the greatest increase has been in Rhodesia, which rose from 0·3 per cent. in 1929 to 8 per cent. in 1936, followed by Canada, rising from 6 per cent. to 12 per cent., and the Soviet Union, from 1 per cent. to 5 per cent. The only other material decrease outside the United States was Mexico, dropping from 4 per cent. to 2 per cent.

Rearmament activities have been largely responsible for heavy increases in production in 1937. Preliminary estimates indicate a world output of about 2,100,000 metric tons, an increase of 26 per cent. over 1936. Among the larger producers, Chile led with an increase of more than one-half, while the United States, Canada, and the African sources stood at about one-third above 1936. Towards the end of the year, however, there was considerable restriction in output, the high point having been reached in the second quarter.

All the countries listed in the table, except the United States, Japan, and the Soviet Union, are comparatively small consumers of copper, and hence produce mainly for export. The chief copper-consuming countries, in order of importance, are the United States, the United Kingdom, Germany, the Soviet Union, Japan, and France, which cover nearly 90 per cent. of the total consumption. The United States is the only major consumer with an export surplus ; all others are dependent on imports for most of their supply. From the returns during the past four years, imports into the United States have averaged 55 per cent. of the domestic output, and exports 77 per cent., leaving a net export of 22 per cent. ; however, the majority of the gross imports consists of ore, concentrates, and blister copper imported under bond for smelting, refining, and re-export. Deducting these items from both sides gives a net import for consumption equal to 9 per cent. of production, and a domestic export of 31 per cent., leaving the same export balance of 22 per cent. Although a material proportion of the output is exported, consumption of copper in the United States far exceeds the new copper supply, the remainder coming from secondary metal recovered from previous use, a source which yielded a larger amount of copper during the depression years than was obtained from the primary production.

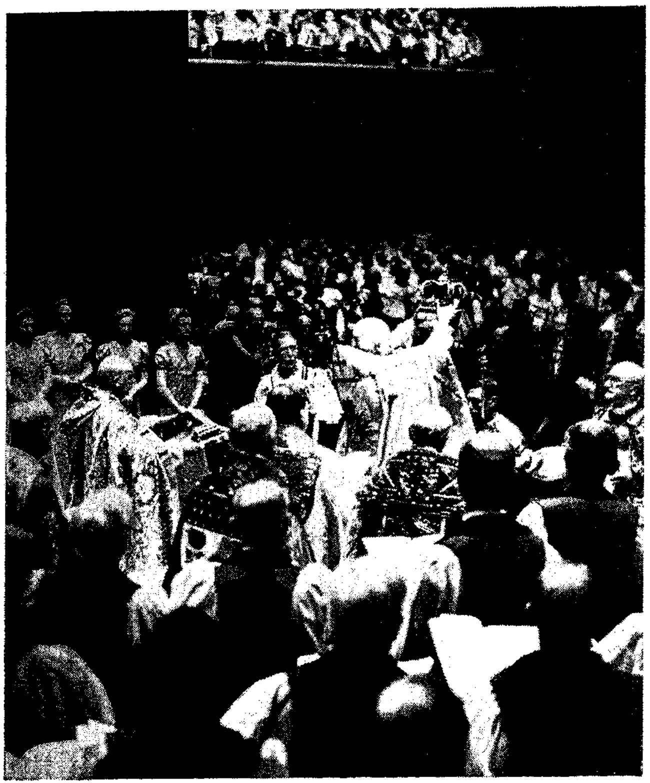
The United Kingdom, the second largest consumer, has only a nominal output of a few thousand tons, and secures practically its entire supply from imports, a growing amount of which is re-exported. Most of the imports are from Empire sources, though the United States and Chile furnish appreciable amounts. Ore and matte make up only about 10 per cent. of the imports, the remainder being divided in about equal proportions between rough copper and electrolytic. German refineries are now producing about 200,000 tons annually, about 85 per cent. of which comes from imports, 60 per cent. as crude copper, and 25 per cent. in ore ; exports are negligibly small. Russian production supplies about two-thirds of the demand, and imports one-third, while in Japan production is slightly less and imports proportionately higher. France has practically no domestic output, and imports almost the entire supply. (*See* also METALLURGY.) (G. A. Ro.)

COPRA : *see* VEGETABLE OILS AND OILSEEDS.

COPTIC CHURCH, THE. This ancient Christian Church of Egypt, with its branch established in Ethiopia by St. Athanasius about A.D. 326, after many years of quiescence was profoundly stirred in the latter half of 1937. The Metropolitan of Ethiopia has always been an Egyptian, appointed and consecrated by the Coptic Patriarch of Egypt, but, after the occupation of Abyssinia by the Italians, the latter, in May 1937, sent the Metropolitan, the Abuna Kyrillos, to Rome. Here ineffectual attempts were made to obtain his consent to the separation of the Churches and he eventually returned, not to Abyssinia, but to Egypt. In September the Italian authorities announced that, while the Metropolitan would be divested of certain powers, he would continue to be elected as before and consecrated by the Patriarch, but on Dec. 1 the Abuna Abraham (aged over 70 and blinded by Italian gas) was invested as Metropolitan at Addis Ababa in the presence of Marshal Graziani, the Viceroy. Strong exception was taken to this, both by the Church on canonical grounds, and by the Egyptian Government, which held it to raise diplomatic issues; but within a few days the new Metropolitan consecrated three bishops and was himself proclaimed Patriarch of an Italian East African Autocephalous Church. On Dec. 12 Italy officially notified the Egyptian minister of foreign affairs to this effect.

On Jan. 4, 1937, the Viceroy had opened, in the presence of the Abuna Kyrillos, the new Church of Mariam in Addis Ababa, the building of which, interrupted by the War, had been completed by the Italian Government.

CORN: *see* GRAIN CROPS.



Fox Photos]

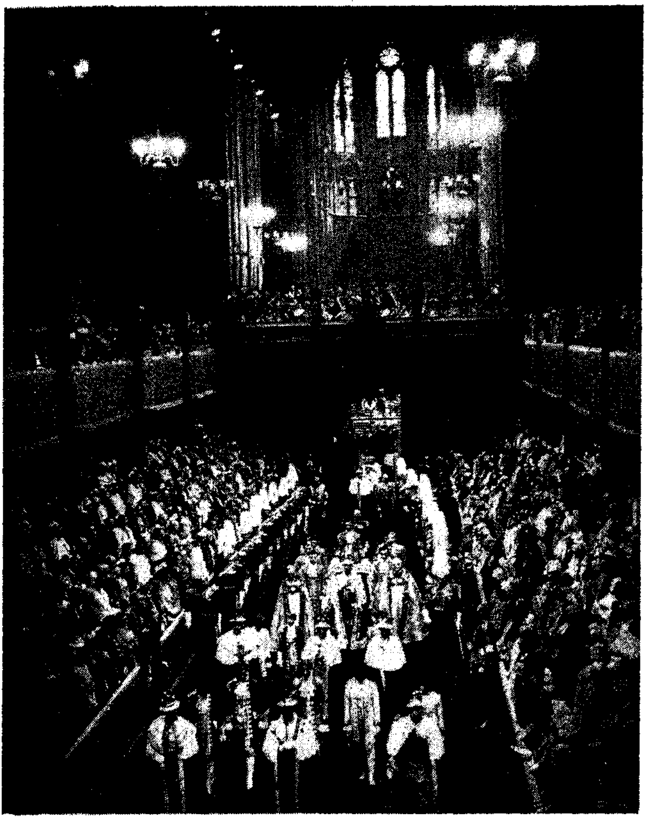
THE ARCHBISHOP OF CANTERBURY ABOUT TO PLACE THE CROWN OF ST. EDWARD ON THE KING'S HEAD

CORONATION. The inauguration of King George VI at Westminster Abbey on May 12, 1937, took place under conditions different from those which attended any previous coronation. The increased facilities for the dissemination of news and pictures, before and after the event, resulted in the ceremony receiving the widest prominence in newspapers and periodicals everywhere, and the radio enabled the peoples of both the Empire and the world at large to keep in close touch with plans and preparations. On the actual day, they were able to hear the service, a privilege hitherto enjoyed by none other than those present inside the church. Furthermore, there has been much recent enquiry into the history of the ceremony, which has persisted unchanged in its essentials from time immemorial, though constantly altered in detail to suit the temper of the period, and material was thus provided for many articles and books which quickened the general appreciation of the ceremony's historic and romantic aspects. There were also the unprecedented circumstances in which King George acceded to the throne, and the fact that his queen was the daughter of a British noble house. It was the first time for four centuries that a lady belonging to that sphere had shared the heritage of an English monarch.

The arrangements for the control of spectators on the day were carried out on a scale far beyond anything previously attempted, the latest scientific methods being applied to the organization. The faster and more extensive transport available for passengers led to an immense flow of visitors into London from all parts of the globe, and hundreds of thousands were able to watch the processions to and from the church in a greater degree of comfort than ever in the past. Throughout the proceedings, the radio enabled spectators to hear something of all that they could not see. The coronation service itself, based on traditions going back in Great Britain a dozen centuries and founded on customary rites whose origin is still more ancient, has alone survived the test of modern criticism, in so far as it should be regarded as the proper ceremonial for the sacring of a twentieth-century Christian ruler. Wonder at such remarkable continuity greatly enlivened the general interest in the event. The outcome of all these factors was that the imagination of the whole world was stirred, and in England an intense enthusiasm was aroused. The latter manifested itself especially in the scenes at outstanding moments during the procedure on the day, such as the appearance of the king and queen at the beginning of their journey from Buckingham Palace to the Abbey; their arrival at the church; the placing of the crown of St. Edward on the king's head, and the culminating point in the ceremony when the king, crowned and invested with the ornaments of kingship, was raised upon his throne in the midst of his people. No useless effort need be made to describe these scenes; for there are few who did not, thanks to the miracle of wireless, receive an impression of them at least better than could be conveyed in words.

The chief tendency of the changes wrought in the coronation ceremony has been to shorten it. In the seventeenth century, the procession from the Tower of London to Westminster on the day prior to the event was discontinued. Since the crowning of George IV in 1821, the elaborate banquet which followed the service has not been held. The former part of the procedure is now represented by the procession from the Palace to the Abbey; but nothing has taken the place of the latter. There are many who would like to see the banquet resumed, and it was certainly a most interesting and colourful occasion; for, during its course, many ancient and picturesque services were performed, some of them, as that of the King's Champion, with great pomp. Moreover, the procession into the church then began in Westminster Hall, instead of in the annexe as now, and returned thither after the service, thus allowing a far larger number of people to see it.

The most important alteration made on the occasion under notice was the revision of the Oath. The origin of the Oath was in the anxiety of the people to ensure so far as possible that they should be justly ruled, and to this end the king was asked to make certain promises, as, indeed, he still is, and not until he had done so was he anointed, crowned and invested with the emblems of



Fox Photos]

CORONATION PROCESSION OF KING GEORGE VI LEAVING WESTMINSTER ABBEY AFTER THE CEREMONY

kingship. Various circumstances throughout the centuries have led to some amendment being necessary to the Oath, and not least of these is the Statute of Westminster which changed the status of the king's dominions. The Irish Free State also had to be considered. Thus, King George V swore to govern ' the people of this United Kingdom of Great Britain and Ireland and the Dominions thereto belonging, according to the Statutes in Parliament agreed on and the respective Laws and Customs of the same'; but for King George VI the passage read: ' the peoples of Great Britain, Ireland, Canada, Australia, New Zealand, and the Union of South Africa, of your possessions and other territories to any of them belonging or pertaining, and of your Empire of India, according to their respective laws and customs'. The promise involved in the third question was changed so that the king undertook to ' maintain the Laws of God and the true profession of the Gospel' throughout his domains; but to maintain ' the Protestant Reformed Religion established by law', in England and Scotland only, and ' to preserve inviolably the settlement of the Church of England, and the doctrine, worship, discipline and government thereof, as by law established in England', in England alone. In this way, the Oath has been brought up-to-date, and continues to represent—as it was always meant to do—the will of the people, and, in the words of Professor Trevelyan, it ' is still a vital and growing reality'. Another alteration in the service was the omission of the sermon, which formerly took its place after the Gospel.

Notwithstanding these revisions, King George VI was crowned according to ancient rites which remain fundamentally unchanged, and amid demonstrations of loyalty —Empire wide—which significantly indicate the strength of his throne. (J. G. N.)

COSMETICS: *see* SOAP, PERFUMERY, AND COSMETICS.

COSMIC RADIATIONS: *see* IONOSPHERE.

COSTA RICA, a Central American republic; language, Spanish; capital, San José (pop. 56,000); president, Léon Cortés. The area is 23,000sq.m.; pop. (est. 1935) 578,040. The year 1937 was marked principally by efforts of President Cortés to put the country on a more solid basis through a debt adjustment with foreign bondholders, a reciprocal trade agreement with the United States, and stimulation of the coffee industry. There are 450m. of railways, and highway and river communications. In 1936, imports (largely foodstuffs and manufactured goods) aggregated £1,877,600 in value. Exports in 1936 were valued at £1,765,000 (coffee, 56·8 per cent., and bananas, 35·5 per cent.), to the United States, Great Britain, and Germany. The principal products are coffee and bananas, the mainstays of the country's economy. Cacao is also produced. Some gold is mined. The monetary unit is the colon (approx. 9*d.*). The national budget for 1937 was £801,841, of which over 20 per cent. was allotted to education.

COST OF LIVING. The upward trend of the cost of living, characteristic of almost the entire world after 1933, continued into 1937, but only in France and Norway (excluding war areas) did 1937 indices of food prices go higher than in 1929. In most nations 1937 food prices were higher than 1936; but the official indices of Germany, Austria, and South Africa show very little change. The increases ranged around five points in the United States, Great Britain, Australia, Bulgaria, Estonia, Hungary, Ireland, the Netherlands, Poland, and Sweden, and were definitely below 5 per cent. in Canada, Australia, and Czechoslovakia. But Great Britain, Finland, Belgium, Norway, and Switzerland experienced almost a 10 per cent. increase in food prices in 1937.

The inclusion of rent, clothing, fuel and light, and sundries would change the picture somewhat. The British Ministry of Labour (*The Ministry of Labour Gazette,* Jan. 1938, p. 5), which furnishes the most complete cost of living picture available in Jan. 1938 for the year 1937, reports that while food prices in Great Britain increased nearly 8 per cent. in 1937, the cost of living of wage-earners increased but 5 per cent. Rents did not rise measurably, fuel and light rose less than food costs, and clothing no more than did foods.

In Canada, food prices increased sharply, from an average index number of 108·5 in 1936 to 117·6 in 1937; but fuel, light, and rent remained practically constant, and clothing increased but slightly (*The Labour Gazette,* Department of Labour, Canada, Jan. 1938, p. 115).

The detailed figures of the United States, Canada, and the United Kingdom reveal that the trends of prices of different foods varied considerably during 1937. In Great Britain, for instance, all major food items became more expensive except fish, margarine, and potatoes. In the United States, meats were approximately 10 per cent. higher in Nov. 1937 than in Nov. 1936; dairy products but 4·4 per cent. higher; beverages, chocolate, sugars, and sweets little higher; and fruits and vegetables, eggs, fats, and oils lower.

Table I shows the relative trend of retail food prices in 11 countries from 1929 to Oct. 1937. The period used as a base by each country is indicated, and reference is given to an article in the *Monthly Labor Review,* from which information about additional countries may be obtained.

Table II, taken from *The Ministry of Labour Gazette,* Jan. 1938, p. 5, shows in greater detail the percentage increase over the 1914 level of the cost of living in Great Britain.

TABLE I

INDEX OF RETAIL FOOD PRICES IN THE UNITED KINGDOM, UNITED STATES, AND CERTAIN OTHER COUNTRIES

(This table is rearranged and condensed from a table in the *Monthly Labor Review*, Jan. 1938, pp. 265–67. Official sources of data and scope of data shown in the *Monthly Labor Review* table.)

Year	United Kingdom	United States	France	Germany	Italy	Norway	Sweden	Australia	Canada	New Zealand	South Africa
	July 1914 = 100	1923–25 = 100	Jan.–June 1914 = 100	Oct. 1913 –July 1914 = 100	Jan.–June 1914 = 100	July 1914 = 100	July 1914 = 100	1923–27 = 100	1926 = 100	1926–30 = 100	1914 = 100
1929 . . .	154	104·7	584	154·5	542·8	158	150	104·7	106·4	101·3	115·3
June 1933 . .	114	64·9	532	113·7	402·9	130	120	72·9	62·2	72·3	98·9
June 1936 . .	126	83·4	514	122·8	431·8	145	134*	81·8	71·3	86·9	103·0
1937:											
January . .	136	84·6	—	121·4	454·0	148	133	85·7	75·2	91·0	100·1
February . .	135	84·5	—	121·9	459·1	150	—	84·8	75·6	91·6	100·4
March . . .	135	85·4	604	122·3	455·3	152	—	84·2	75·7	92·3	101·3
April . . .	135	85·6	—	122·3	457·8	155	137	84·8	76·3	94·3	102·2
May . . .	136	86·5	—	122·4	459·6	156	—	84·6	76·6	95·1	103·0
June . . .	136	86·3	629	122·9	464·9	157	—	84·7	76·4	94·5	102·9
July . . .	140	85·9	—	124·5	481·0	161	138	85·3	77·2	95·4	102·3
August . .	140	85·5	—	124·0	486·0	161	—	85·2	79·1	95·6	101·6
September . .	140	85·8	—	122·0	502·6	163	—	—	78·3	—	101·1
October . .	143	84·9	—	121·3	—	—	140	—	78·9	—	—
November . .	146	83·6	—	—	—	—	—	—	—	—	—
December . .	146	—	—	—	—	—	—	—	—	—	—

The number of articles included in the indices for the various countries varies widely. The indices are not absolutely comparable from month to month over the entire period for certain countries, owing to changes in the numbers of articles included at different dates.

* July.

BIBLIOGRAPHY.—Readers interested in additional information are referred to current issues of *The Ministry of Labour Gazette* (British Ministry of Labour), *The Labour Gazette* (Department of Labour, Canada), and the *Monthly Labor Review* (United States Bureau of Labor Statistics).

TABLE II

AVERAGE PERCENTAGE INCREASE IN GREAT BRITAIN DURING 1937, IN RETAIL PRICES, RENTS, ETC., OVER THE LEVEL OF JULY, 1914

Date	Food	Rent and Rates	Clothing	Fuel and Light	Other Items	All Items Included
Jan. 1 .	36	59	90–95	75–80	70	51
Feb. 1 .	35	59	95	75–80	70–75	51
March 1 .	35	59	95	75–80	70–75	51
April 1 .	35	59	95–100	75–80	70–75	51
May 1 .	36	59	100	75–80	70–75	52
June 1 .	36	59	100–105	75	75	52
July 1 .	40	59	105	75	75	55
July 31 .	40	59	105	75	75	55
Sept. 1 .	40	59	105	75–80	75	55
Oct. 1 .	43	59	105–110	80	75	58
Nov. 1 .	46	59	110	80	75	60
Dec. 1 .	46	59	110	80–85	75	60
Jan. 1, 1938	45	59	110	80–85	75	59

COTTON AND COTTON MANUFACTURE. The world produced and used more cotton in 1937 than ever before. Production was estimated in round numbers at 38 million bales for the calendar year; consumption, 31 million bales. The cotton year, however, begins Aug. 1, and statistical data are reported for each twelve months following that date. The previous high record, both in production and consumption, was for the immediately preceding crop year of 1936–37, when world production was 30,700,000 bales and consumption 30,991,000 bales. The third largest annual production for the world was 27,930,000 bales in 1926–27.

During recent years, while the United States was restricting production by granting subsidies on acreage withdrawn from cotton growing, South America has rapidly extended its acreage, especially in Brazil and to some extent in Argentina, and has become one of the world's important cotton producers. While the acreage planted to cotton in Asia and Africa has been expanded to some extent, the larger crops in those areas are chiefly the result of increasing the yield per acre. In 1936–37, India, Egypt, China, Russia, and Brazil had high-record crops. These conditions of increased acreage and higher yields have resulted in making cotton more abundant and cheaper, thereby encouraging the manufacture of cotton products and their largest use thus far in world history.

The carry-over of cotton from 1936–37 to the current year of 1937–38 was 13,313,000 bales, of 478lb. net to the bale. Of this, 6,235,000 bales was United States cotton. The remainder, 7,078,000 bales, was the total carry-over from all other cotton countries.

Production by Countries.—For 1937–38 and the preceding year, the International Institute of Agriculture gives the following figures of production in the principal cotton-growing countries. To facilitate comparison, the 1936–37 figures are here placed in parentheses. The Institute's data are for bales of 478lb. net, and are as follows:

United States, 18,746,000 bales (12,399,000); India, 4,547,000 bales (4,497,000); Russia, 3,482,000 bales (3,551,000); Egypt, 2,282,000 bales (1,887,000); China, 3,225,000 bales (3,914,000); North Brazil, 868,000 bales (640,000); Mexico, 326,000 bales (359,000). The 1936–37 production for South Brazil was 1,201,000 bales, and for Argentina, 143,760 bales. The forthcoming 1937–38 crop in the Argentine promises still larger production because of increased acreage.

The five-year average annual production of cotton for the period ending in 1935–36 is reported by the International Institute of Agriculture as follows: United States, 12,684,000 bales; India, 3,768,000 bales; China, 2,434,000 bales; Russia, 1,947,000 bales; Egypt, 1,491,000 bales; North Brazil, 549,000 bales; South Brazil, 480,000 bales; Argentina, 238,000 bales; Mexico, 209,000 bales.

United States.—The largest cotton crop ever produced in the United States was that of 1937, which, the department of agriculture estimates, was 18,746,000 bales, from 33,930,000 acres. The previous high record was 17,977,000 bales from 47,087,000 acres in 1926. In 1931, production was 17,095,000 bales from 38,705,000 acres. Other high production years were 1914, when 16,135,000 bales were produced from 36,832,000 acres, and 1925, when production was 16,104,000 bales from 48,090,000 acres. In no years, other than the foregoing, has United States cotton production been as much as 15 million bales. For 1936 production was 12,399,000 bales. It was 10,638,000 bales in 1935. The lowest yield since 1921 was 9,636,000 bales in 1934.

The record United States crop in 1937 from a comparatively small acreage was owing to favourable growing conditions, a larger use of fertilizers, and to the government's soil-conservation programme to withdraw land from cotton and adopt soil-building practices of liming, terracing hillside fields to prevent erosion, and planting legumes and crops other than cotton, which has long been the great cash crop of the South. Previously the government had suspended its policy of granting loans to farmers to enable them to hold their cotton off the market when prices were low. Instead a direct subsidy was granted for acreage withdrawn from cotton. Government loans were resumed late in 1937. In 1936–37 the government held 3,158,656 bales taken for unpaid loans, but this had been reduced to 1,677,559 bales by the beginning of the 1937–38 year.

Cottonseed.—The huge world cotton crops have directly affected world markets for vegetable oils and animal fats, since cottonseed oil is widely used in foods and various industrial processes and competes actively with butter, lard, copra and soya bean and peanut oil, marine oils, and other similar products. No reliable data are available for current world production, as the grinding and pressing of the seed from a crop are not completed until after seed requirements for the succeeding planting are met. In the United States 1,003,457,968lb. crude cottonseed oil were produced from the grinding of the small crop between Aug. 1, 1936, and Jan. 1, 1937. *See* also VEGETABLE OILS AND OILSEEDS.

Cotton Manufacture.—Although great strides have been made in the manufacture of piece-goods from synthetic fibres, cotton comprises by far the bulk of world production. It is the cheapest form of clothing produced, and as a result, is the lowest-priced and most economical form of wearing apparel for the millions of low-wage earning peoples in world countries. The four largest manufacturing countries are the United States, United Kingdom, India, and Japan. The United Kingdom and Japan export a large proportion of their output. The United States' production is mostly for home consumption. India was formerly in this category, but latterly she has been able to increase her exports, especially to British colonies, and now is looming large as a competitor of the United Kingdom.

The world production of cotton piece-goods has shown little change in the past few years. According to a census of cotton looms taken by the International Federation of Master Cotton Spinners' and Manufacturers' Associations, the total number of world looms in three years to Jan. 1, 1937 (the date of the census and the latest figures available) showed an increase of only 10,526. Looms in Great Britain had declined by 83,191 in three years, and in the United States by 40,181. These decreases were offset by increases in Russia, Japan, China, India, and in certain less important countries. It is obvious, therefore, that eastern countries, chiefly on account of relatively low wage rates and longer hours worked in the mills, are making steady progress in the production of cotton goods, whereas the tendency in Europe, and particularly in Great Britain, is to decline.

The growth of competition by Eastern countries has been causing increasing anxiety to European, and particularly British, manufacturers, and this movement is likely to increase on account of the factors mentioned above. It was, of course, inevitable that cotton manufacturing in India, Japan, and China should increase as those countries became more westernized, but the growth has been more rapid than trade leaders anticipated. Production in Great Britain is now estimated to be at around 4,000 million square yards a year, and about half of this quantity is exported, the other 2,000 million yards being consumed in the home market. Prior to the European War in 1914, British exports alone totalled to nearly 7,000 million square yards, which represented 75 per cent. of the total British output.

According to the latest figures of production, the Indian mills are now producing at the rate of 4,000 million yards a year, which is equal to Britain's output. As a point of interest, however, India still imports a large quantity of cloth, the 1936 total from the United Kingdom being 416·4 million square yards, and 355·7 million square yards for the 12 months of 1937. For the 12 months ended March 31, 1937, imports from Japan totalled 472·6 million square yards. The total exports of cotton piece-goods to all countries, from the United Kingdom for the 12 months ended Dec. 31 1937, totalled 1,921,918,000 square yards, as compared with 1,916,604,000 square yards in 1936. British yarn exports amounted to 159,098,500lb. as compared with 150,924,800lb. in 1936.

One of the most important developments in textile manufacture, especially in Great Britain, has been in the production of piece-goods made from spun staple fibre. The raw material is being produced by the principal rayon companies in increasing quantities, and production of this particular type of cloth is expanding rapidly. It is not possible to obtain figures as to yardage, but a large number of Lancashire spinning mills are utilizing this relatively new method of producing rayon yarn. Briefly, it is the rayon filament cut into staple lengths, spun on a spinning frame, and then manufactured into cloth. The method improves the ' feel ' and texture of the finished rayon fabric.

With regard to textile machinery, no revolutionary improvements have been made during the past 12 months, but at the same time machinery makers have been concentrating their attention on the production of mechanisms and apparatus for the more economic production of yarn and cloth. In the spinning section, the use of high-speed cages for the elimination of dust and dirt is of great interest. This is important from the operatives' point of view, as it should lead to a reduction in illness caused by respiratory disease.

Perhaps the most important step taken in spinning mills during the past few years has been the introduction of the high draft system of spinning. This system has been adopted particularly in the United States and in Great Britain, but it is now being taken up by other cotton spinning and manufacturing countries. Another interesting feature has been the increasing use of variable speed motors for driving ring frames. It has been adopted satisfactorily, not only in its application to ring frames, but also to winding machines and other types of machinery in a cotton mill where variable speed is necessary. Important progress has also been made in the development of machines and processes which lie between the spinning spindle and the loom. Improved types of winding and warping machines have been produced, which, whilst obtaining the increased speed and production demanded, ensure that the wound packages and the completed warp maintain a high degree of quality.

There has also been a definite development in the use of the cotton system as against the horizontal mill system for the production of rayon warps. The first-named system has been very largely adopted in the United States, and costs of production have been materially reduced. Increased speeds in these earlier processes have brought about the introduction of improved sizing machines, both for cotton and rayon, and they have enabled greater production to be secured when slashing. Seven-cylinder sizing machines are now obtainable. Warp stretch control apparatus has been applied to sizing machines, with the result that modern warps, even though they are produced at a very much higher rate of speed than the old type warps, are infinitely better in regard to the elasticity of the yarn and warp in general.

With regard to cotton looms, probably the most important development has been in general construction. This applies also to the manufacture of automatic looms, and practically every type of cloth, from low-grade qualities to intricate fancy weaves, can now be produced by automatic machinery.

World Cotton Machinery : Spindles.—The following are official statistics of spindles in the chief producing countries compiled by the International Federation of Master Cotton Spinners' and Manufacturers' Associations, as on July 31, 1937 :

	Spindles (000's omitted)
GREAT BRITAIN	38,753
UNITED STATES	26,983
JAPAN	11,880
GERMANY	10,236
*RUSSIA	10,050
INDIA	9,876
FRANCE	9,783
†ITALY	5,483
*CHINA	5,071
CZECHOSLOVAKIA	3,445
BRAZIL	2,714
BELGIUM	2,004
SPAIN	2,070

* Estimated. No returns received.
† Figures for July 31, 1935.

The number of world spindles amounts to 149,618,000. Of this total, 88,733,000 are in Europe, 26,827,000 in Asia, and 31,674,000 in the United States and South American countries. The total in other countries is 2,384,000. The spindles in course of erection on July 31, 1937, totalled 122,000 in Europe, 177,000 in Asia ; U.S.A. figures are not available.

Looms.—According to the International Cotton Loom Census taken by the International Federation of Master Cotton Spinners' and Manufacturers' Associations, the total number of world looms on Jan. 1, 1937 (latest figures available), amounted to 3,070,395. This number includes both ordinary and automatic looms. The following table shows the number of looms in place, based on actual returns, in the principal countries :

Country	Ordinary	Automatic	Total (including automatic attachments)
*UNITED STATES .	181,123	392,329	573,452
GREAT BRITAIN .	483,984	15,224	504,773
JAPAN . .	292,564(*a*)	40,000(*a*)	332,564
†RUSSIA . .	216,000	25,000	250,000
INDIA . .	197,363	4,185	201,548
GERMANY . .	169,800	18,200	200,500
FRANCE . .	152,800	37,700	193,900(*b*)
‡ITALY . .	91,500	33,500	146,500
CZECHOSLOVAKIA	100,890	1,930	104,180

* Approximate figures compiled by Cotton Textile Institute of New York.
† No returns. Figures estimated from trade sources.
‡ No returns. Jan. 1934 total given.
(*a*) International Federation estimates.
(*b*) Excludes 8,600 linen looms usually working on cotton or cotton and rayon cloths.

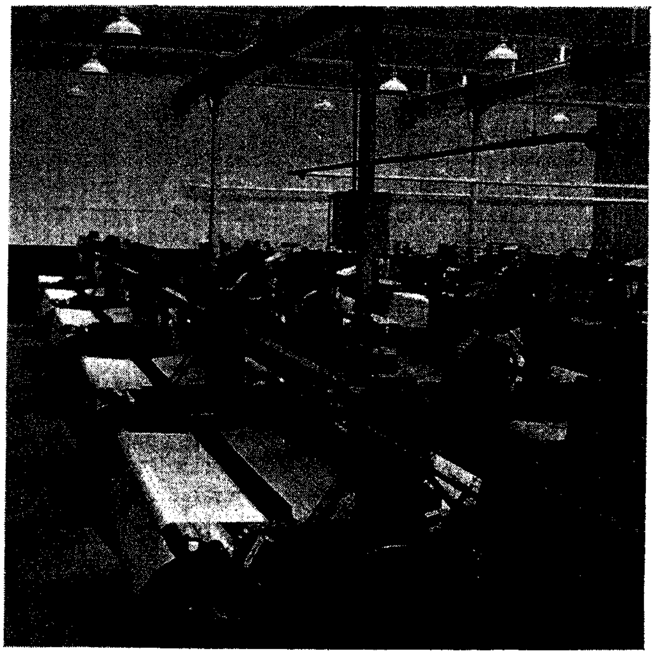
The world total of all looms, including ordinary, automatic, and those with automatic attachments on Jan. 1, 1937, and Jan. 1, 1934 (the previous census), is as follows :

	Jan. 1, 1937	Jan. 1, 1934
EUROPE	1,742,202	1,776,580
AMERICA	724,727	766,065
ASIA	599,800	515,469

WORLD'S TOTAL

	Ordinary	Automatic	Automatic Attachments	Total
Jan. 1, 1934 .	2,411,227	596,596	52,046	3,059,869
Jan. 1, 1937 .	2,344,183	662,167	64,045	3,070,395

See also FLAX AND LINEN ; RAYON ; TEXTILE INDUSTRY ; WOOL ; etc. (F. W. TA.)



NORTHROP AUTOMATIC LOOMS AT THE WORKS OF VANTORA TEXTILES LTD., BOLTON

COUBERTIN, PIERRE DE FREDI, Baron de, honorary president of the Olympic Games Committee; born in Paris, Jan. 1, 1863, a descendant of Rubens and Cyrano de Bergerac; died Sept. 2, 1937. The baron worked enthusiastically for the adoption by French schools of the English public school athleticism, and he, more than anyone else, was responsible for the rapid spread of Rugby football in France. Conceiving the project of reviving the Olympic Games, in 1894 he assembled a congress in Paris, after which an international committee was founded; and the first revival of the Olympic Games duly took place in Athens in 1896. In 1928 the baron was awarded the Nobel Peace Prize; and at Lausanne, in Jan. 1937, a celebration was held in honour of his 50 years' service in the fields of education, scholarship, and athletics. He published several educational works, and among his historical works were *L'Evolution française sous la* III^e^ *République*; *La Chronique de France*; *Où va l'Europe?*; and *Histoire Universelle.*

COUNTRIES OF THE WORLD: AREAS AND POPULATIONS

Name of State	Area (in Square Miles)	Population (1,000's omitted)	Population per Square Mile
AFGHANISTAN	*c.* 245,000	*c.* 11,000	*c.* 48
ALBANIA	10,629	1,003	94·2
*ANDORRA	191	5	27·4
ARGENTINE REPUB.	1,079,965	12,561	11·6
AUSTRALIA, COMMONWEALTH OF	2,974,581	6,820	2·9
AUSTRIA	32,369	6,760	208·9
BELGIUM	11,775	8,300	704
BOLIVIA	514,465	3,171	6·2
†BRAZIL	3,291,416	42,395	12·9
BULGARIA	39,825	6,254	153
‡BURMA	233,492	14,667	62·8
CANADA	3,466,556	10,377	2·9
CHILE	289,776	4,552	15·8
CHINESE REPUBLIC	*c.* 2,845,740	*c.* 418,479	*c.* 145·5
COLOMBIA	440,846	8,580	19·3
†COSTA RICA	23,000	578	25·1
CUBA	44,164	4,011	90·9
CZECHOSLOVAKIA	54,244	14,730	271·8
*DANZIG, FREE CITY OF	754	407	540
DENMARK	16,575	3,706	224
DOMINICAN REPUB.	19,325	1,478	76·4
ECUADOR	*c.* 337,000	*est.* 3,414	*c.* 10·1
EGYPT	*c.* 380,000	15,905	24·1
ESTONIA	18,353	1,126	61·3
ETHIOPIA	*est.* 350,000	*est.* 7,600	*c.* 21·7
FINLAND	134,557	3,667	27·3
FRANCE	212,736	42,013	195·2
†GERMANY	181,699	67,590	372
GREAT BRITAIN AND NORTHERN IRELAND, UNITED KINGDOM OF	94,278	44,937	466
GREECE	50,275	6,839	123·5
§GUATEMALA	*c.* 48,290	*est.* 2,373	49·4
HAITI	*est.* 10,204	*est.* 2,550	*c.* 294
§HONDURAS	*c.* 46,332	974	*c.* 21·8
HUNGARY	35,911	8,989	249·4
*ICELAND	39,709	109	2·6
INDIA	1,575,187	338,171	215
IRAN (PERSIA)	*c.* 628,000	*c.* 15,000	*c.* 23·9
IRAQ	116,600	2,857	24·5
IRISH FREE STATE	26,600	2,966	116
§ITALY	119,740	42,528	346·8
†JAPAN	178,756	*est.* 69,254	*c.* 387·4
LATVIA	*c.* 20,056	1,951	97·5
LIBERIA	*c.* 44,000	*c.* 2,000	*c.* 44
*LIECHTENSTEIN	65	10	157·1
LITHUANIA	21,489	2,500	115·7
LUXEMBURG	999	297	297·2
MEXICO	767,200	16,553	21·6
*MONACO	8	22	2519
NETHERLANDS	12,692	8,475	668
NEWFOUNDLAND	42,740	2,896	6·8
NEW ZEALAND	103,722	1,574	15·2
§NICARAGUA	*c.* 49,200	*c.* 638	*c.* 15
NORWAY	124,588	2,814	22·6
PANAMA	34,169	467	14·5
†PARAGUAY	*c.* 70,000	*est.* 913	*c.* 15
PERU	532,185	*est.* 6,792	*c.* 12·7
POLAND	150,000	32,134	214
PORTUGAL	35,490	6,826	192·2
RUMANIA	113,884	*est.* 19,423	171
§SALVADOR	13,176	*est.* 1,632	*c.* 120
*SAN MARINO	38	14	367
*SA'UDI ARABIA	*c.* 600,000	*c.* 4,500	*c.* 15
SIAM	200,148	*est.* 14,502	*c.* 65
SOUTH AFRICA, UNION OF	472,550	9,589	20·3
SPAIN	196,600	*est.* 24,583	*c.* 125·5
SWEDEN	169,842	6,249	36·8
SWITZERLAND	15,944	4,066	254·8
*TIBET	*c.* 450,000	*est.* 2,000	*c.* 4·3
TURKEY	295,000	16,200	55
U.S.S.R.	8,167,559	180,700	20·6
*UNITED STATES	3,026,789	129,257	43·2
URUGUAY	72,153	2,035	28·3
*VATICAN CITY	·17	1	6030
VENEZUELA	393,976	3,406	9·7
*YEMEN	*c.* 75,000	*c.* 3,000	*c.* 40
YUGOSLAVIA	95,558	15,000	156

NOTE.—All the above-named States are members of the League of Nations, with the exception of those marked *, which have never acceded, and those marked †, which have resigned membership: Guatemala, Honduras, Italy, Salvador and Nicaragua (marked §) have also announced their withdrawal from the League, the withdrawals becoming effective respectively on May 13, 1938, June 22, 1938, Dec. 11, 1939, Aug. 11, 1939, and June 26, 1938.

‡ Burma's membership of the League is, for the present, covered by that of India.

COX, SIR PERCY ZACHARIAH, British administrator; born Nov. 20, 1864; died at Melchbourne, Beds., Feb. 20, 1937. A biographical note is to be found in the *Ency. Brit.*, vol. 6, p. 625. Sir Percy's last official act was to represent India at the Geneva Conference of 1925 for framing a convention for control of the arms traffic. After his retirement he served as president of the Royal Geographical Society (1933–36). In 1889 he married Belle Hamilton.

CRAFTSMANSHIP. In modern speech, the word 'craftsmanship' means the skill of the workman in the use of his hands or tools as manifested in a thing made. There is therefore no craftsmanship in the product of automatic machines, though the machines themselves may be admirable examples of it. The development of machine facture during the past 150 years, called forth by the universal application of the principle of production for profit, *i.e.*, for the profit accruing to the owners of invested capital, has had the inevitable result of lessening the number of craftsmen required, and has also effected the destruction of many crafts, *i.e.*, trades depending on the supply of craftsmen.

This result is deplored by those who demand that things made for human use should be in their actual substance the product of human sensibility. It is deplored by those who know that men and women demand that things for daily and household use shall be as ornamental as they used to be in pre-industrial times, but that only starkly plain and functional things can properly be made by machines, and that the result of the mechanization of industry has been to flood the world with imitations of ornament. And it is deplored by those who see in our industrialism a destruction of human responsibility ; for the worker in the factory is not responsible for what the machine makes (a machine makes only what it is designed to make), and is therefore, in fact, only a sentient part of the machinery.

On the other hand, the destruction of craftsmanship in the making of the ordinary necessities of life has caused a special value to be placed upon the work of those few special individuals who still pursue the ancient pre-industrial methods of making. It was formerly true to say that ' the artist is not a special kind of man, but every man is a special kind of artist '. Now, this is true no longer. The artist is a very special kind of man, and the factory workman in his working hours has been reduced to a subhuman condition of intellectual irresponsibility.

Moreover, the works of these special artists, owing to their comparative costliness, are purchasable only by the comparatively rich. The consequence is that, for the most part, only those objects are made for which the richer class of buyer has a liking. Many of these objects, in spite of the artificial circumstances of their production and their consequent self-consciousness, display a quality of craftsmanship unsurpassed in pre-industrial times. In the ' fine arts ', craftsmanship has declined, because it is supposed to be a hindrance to the free expression of sensibility, but in the works of those called ' artist-craftsmen ' (to distinguish them from ' factory hands '), craftsmanship has advanced and is venerated for its own sake.

The future of craftsmanship depends upon the future of machine industry, and the future of industrialism depends upon the future of banking. At this point the subject must be left for elucidation by financiers and economists. (E. Gi.)

CRAIGMYLE, THOMAS SHAW, 1st Baron, of Craigmyle, British Lord of Appeal ; born at Dunfermline, May 23, 1850 ; died in Glasgow, June 28, 1937. A member of the Faculty of Advocates since 1875, he took silk in 1894, in which year also he was appointed Solicitor-General for Scotland. He sat as Liberal M.P. for Hawick Burghs from 1892 until 1909, when he was created a life peer (Baron Shaw of Dunfermline) in the capacity of Lord of Appeal. This office he held until 1929, when he received a peerage of the United Kingdom. In 1879 he married Elsie Stephen Forrest, and he had a son and three daughters.

CRETE : *see* GREECE.

CRICKET. Cricket rivalry between England and Australia has gone on for 60 years, but rarely has a series of matches between the countries proved of such absorbing interest as that in Australia which ended in March 1937, with Australia winners by three games to two. When the year dawned, England were two up. In each Test success had fallen to the side which won the toss, and this also applied to the three remaining games. Never before has a side emerged victorious after losing the first two matches in a rubber of five. Results :

First Test (Brisbane). England won by 322 runs.

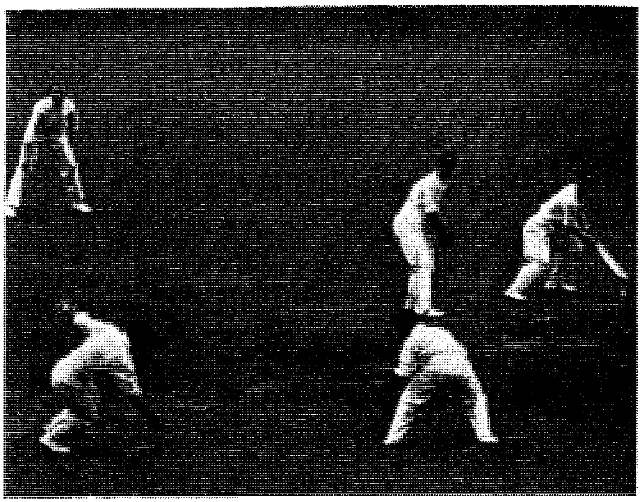
Second Test (Sydney). England won by an innings and 22 runs.

Third Test (Melbourne). Australia won by 365 runs.

Fourth Test (Adelaide). Australia won by 148 runs.

Fifth Test (Melbourne). Australia won by an innings and 200 runs.

On the whole the teams were very equal, but the phenomenal batting form of D. G. Bradman, the Australian captain, turned the scales. In both the Third and Fourth Tests, Bradman hit a score of over 200, and he also reached three figures in the final game. Bradman, who had a batting average of 90, surpassed all other performances for Australia during the series, and when L. Fleetwood-Smith was fit to play he and W. J. O'Reilly formed a deadly pair of spin bowlers. O'Reilly in the Tests took 25 wickets. For England W. R. Hammond (Gloucestershire) and M. Leyland (Yorkshire) carried off chief batting honours, and the most effective bowling was done by W. Voce, of Nottinghamshire.



Sport and General]

MIDDLESEX V. YORKSHIRE AT LORDS, JUNE 9, 1937. WOOD OF YORKSHIRE PLACES A BALL FROM N. F. TURNER, THE MIDDLESEX BOWLER, PAST HENDREN IN THE SLIPS

D. G. Bradman, scoring 810 runs, raised his aggregate against England to 3,406, which is the highest in the whole series by an Australian, and is surpassed only by J. B. Hobbs for England.

In the First Test W. A. Oldfield (Australia) set up a new record for the number of batsmen dismissed by a wicket-keeper in the England-Australia matches. In all he has dismissed 90 batsmen.

The following record partnerships were established :

Third wicket (record for Australia), 249 by D. G. Bradman and S. J. McCabe in the Fifth Test at Melbourne.

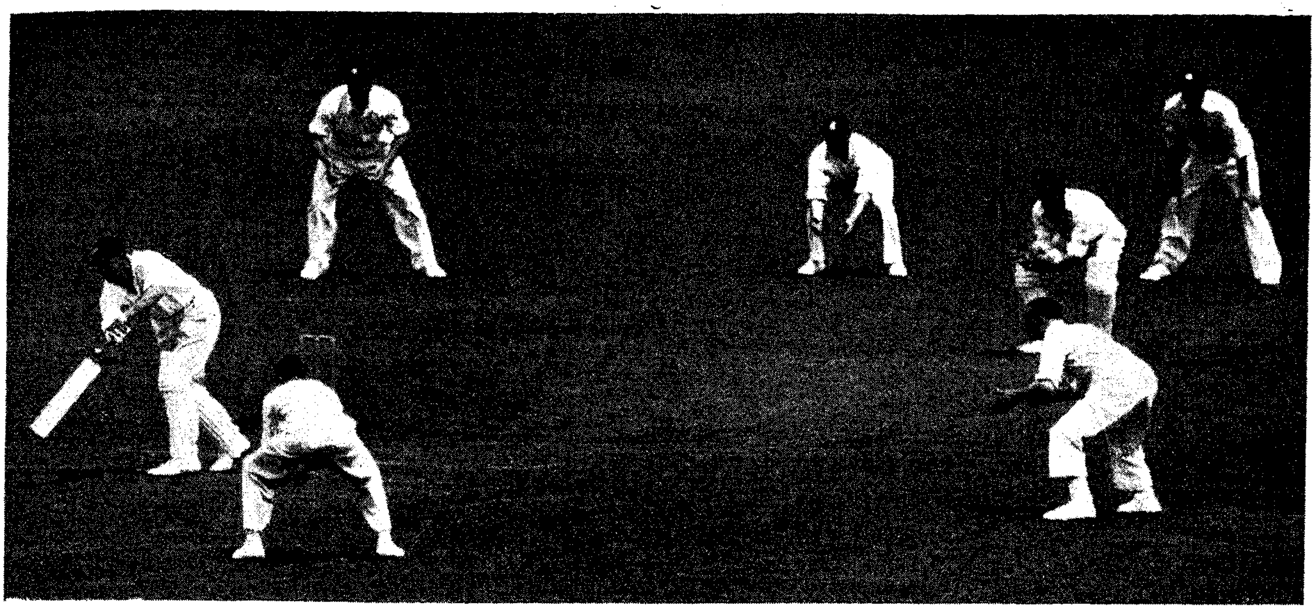
Sixth wicket (highest stand for any wicket in an England–Australia Test in Australia), 346 by D. G. Bradman and J. H. Fingleton for Australia in the Third Test at Melbourne.

In the Third Test, each side declared its *first* innings closed—an unprecedented happening in Test cricket.

All attendance records for a Test Match were smashed when, at Melbourne on the third day of the Third Test, 87,798 persons were present. The returns for the whole match were 350,534 spectators and £29,687 in gate receipts.

Another Test series followed, between England and New Zealand in England. England's victory by 130 runs at Manchester—in the only game of three that was finished—decided the rubber, but the issue might have gone the other way had New Zealand held catches at a critical point. The success of J. Hardstaff (Nottinghamshire) in making centuries both at Lord's and at The Oval was noteworthy. Although the New Zealanders won only 9 of 32 first-class matches, there was much promise in the batting of M. W. Wallace. The bowling of J. Cowie (medium-fast) was wonderfully steady and accurate, equal to that of any bowler in modern cricket. On their way home the New Zealanders played several matches in Australia.

Keen interest in the county championship was sustained until the last few days of August. Not for many years had the competition produced such a stern struggle for leading honours and such a wealth of entertaining cricket. Middlesex ran Yorkshire very close, and the lead changed hands four times, but Yorkshire finished champions. This fight



Sport and General]

ENGLAND V. NEW ZEALAND AT LORDS, JUNE 28, 1937. ILLUSTRATING HOW GOVER SET UP HIS SLIPS TO TRAP J. L. KERR, NEW ZEALAND

for supremacy between North and South had an interesting sequel when a challenge match between the two counties was played in September. Middlesex were vanquished by an innings and 115 runs, but the game captured the imagination of the public, and charities benefited appreciably from the receipts. The final positions in the championship table were:

	P.	W.	L.	Won on 1st Inn.	Lost on 1st Inn.	No Res.	Pts. Poss.	Pts. Obt.	Percentage
Points awarded	—	15	—	5	3	4	—	—	—
Yorkshire	28	18	2	4	4	0	420	302	71·90
Middlesex	24	15	4	3	2	0	360	246	68·33
Derbyshire	28	14	6	2	4	2	420	240	57·14
Gloucestershire	30	15	10	2	3	0	450	244	54·22
Sussex	32	13	7	8	4	0	480	247	51·45
Essex	28	13	11	2	1	1	420	212	50·47
Glamorgan	28	11	7	4	6	0	420	203	48·33
Surrey	26	8	5	7	4	2	390	175	44·87
Lancashire	32	9	5	12	6	0	480	213	44·37
Nottinghamshire	28	6	4	8	8	2	420	162	38·57
Warwickshire	24	6	8	6	4	0	360	132	36·66
Kent	28	8	16	2	2	0	420	136	32·38
Somerset	28	7	14	2	5	0	420	130	30·95
Hampshire	28	7	16	4	1	0	420	128	30·47
Worcestershire	30	8	17	0	5	0	450	135	30·00
Leicestershire	26	1	11	3	11	0	390	63	16·15
Northamptonshire	24	0	16	4	3	1	360	33	9·16

Of several new records made during the season, that of J. H. Parks (Sussex) was outstanding. Parks, by scoring 3,003 runs and taking 101 wickets, accomplished a feat which is unparalleled. For the first time, two players on the same day hit a score of 300; R. H. Moore (Hampshire) made 316 and E. Paynter (Lancashire) 322. The fastest piece of scoring ever seen in first-class cricket was that of Kent against Gloucestershire at Dover. Kent needed 218 runs to win, and scored them in 71 minutes.

The distinction of making two centuries in a match was enjoyed by four batsmen: C. S. Dempster (Leicestershire), L. E. G. Ames (Kent), D. R. Wilcox (Essex), and L. B. Fishlock (Surrey). 'Hat-tricks' numbered ten, and W. Copson (Derbyshire), H. J. Butler (Nottinghamshire), and D. V. P. Wright (Kent) twice performed this feat, Copson in one match—against Warwickshire—taking four wickets in as many balls. A remarkable bowling effort during the summer was that of J. C. Clay (Glamorgan), who, in his 40th year, took 17 wickets in a match against Worcestershire.

W. R. Hammond (Gloucestershire), the one other batsman besides Parks to score 3,000 or more runs, headed the English batting averages, as he did in 1936, with an aggregate of 3,252 runs and an average of 65·04. Next in order came J. Hardstaff (Nottinghamshire), who averaged 57·72, and L. Hutton (Yorkshire) was third in the list with 2,888 runs, including 10 centuries.

The selectors of England teams (Sir Pelham Warner, Mr. P. A. Perrin, and Mr. T. A. Higson) searched in vain for new bowlers of the class required for representative cricket, and bowling honours were again distributed among the seasoned players. T. W. Goddard (Gloucestershire) was surpassed as regards average by H. Verity (Yorkshire), but he took 248 wickets, which was more than anyone else. Among several well-known cricketers who decided to retire at the end of the season were E. Hendren (Middlesex), who during a career dating back to 1907 had scored 57,592 runs, A. Sandham (Surrey), and J. C. White (Somerset); and Sussex decided not to re-engage M. W. Tate.

To celebrate the 150th anniversary of the M.C.C., a week's high-class cricket was played at Lord's in May. South beat the North by six wickets, and the M.C.C. Australian XI overcame the Rest of England by 69 runs.

In May the M.C.C., by unanimous vote, sanctioned an alteration in Law 24 which deals with leg-before-wicket. An experimental rule had been in operation during 1935 and 1936. The change means that the striker may be out to a ball which, pitching on the off side of the striker's wicket, would have hit the wicket had it not been intercepted by part of the striker's person (except his hand) which part was between wicket and wicket at the moment of impact.

Before the season began the counties invited the M.C.C. to appoint a commission to investigate problems confronting first-class cricket. In December the commission (Mr. W. Findlay, Mr. R. C. N. Palairet, and Mr. R. H. Mallett) issued their report, which made certain recommendations concerning the finances of cricket, suggested a revision of the method of scoring county championship points, and of the conditions under which a player might qualify for a particular county, and recommended a stricter adherence by county teams to the hours of play.

Lancashire Second Eleven became champions of the

Minor Counties Competition by beating Surrey Second Eleven in the challenge match. There was strong competition for honours from Hertfordshire as well. A feature of the season was a performance of N. Harding, a medium-fast bowler, who took 18 wickets for Kent against Wiltshire.

Winners of the several competitions played overseas were as follows:

Sheffield Shield (Australia)—Victoria.

Currie Cup (South Africa).—Natal (A. D. Nourse jun., scored 846 runs).

Inter-Colonial Tournament (West Indies).—Trinidad.

Bombay Quadrangular Tournament (India).—The Hindus.

Plunket Shield (New Zealand).—Auckland.

An M.C.C. team toured Canada in August and won 12 out of 19 fixtures. (W. H. Br.)

CRIME. The following article is devoted to a consideration of crime in Great Britain and the U.S.A. during 1937.

Great Britain.—Whereas the number of persons under 16 years of age found guilty of indictable offences is increasing rapidly (*see* Juvenile Crime), the number of those in higher age-groups is beginning to show signs of decline. From the high level of 51,180 in 1932, for example, the number fell in 1935, the latest year for which complete statistics are available, to 47,424.

These statistics show that the incidence of crime is nearly eight times greater among males than females: 370 out of every 100,000 men and boys in the population were found guilty of indictable offences, the corresponding figure for women and girls being only 47, though the number of females charged has shown a steady increase since 1930. Of every 1,000 men and boys, 10 under the age of 16, 7 between 16 and 21, 4–5 between 21 and 30, and 1–2 over 30 were found guilty of indictable offences.

In about 74 per cent. of the cases of indictable offences, the crime was larceny, and in more than half of these the persons charged were under 21. Next in order of frequency comes fraud and false pretences with 10 per cent., 'breaking and entering' (7 per cent.), miscellaneous offences, including attempted suicide (4 per cent.), and sexual offences and offences against the person with 3 per cent. each.

Of 168,485 cases of theft known to the police (involving 30,347 cases of 'breaking and entering' and 138,138 cases of larceny), the value of the property stolen was under £5 in 79·5 per cent. of the cases, between £5 and £100 in 19·3 per cent., and over £100 in 1·2 per cent. A recent analysis of property stolen in the Metropolitan Police District showed that in 30 per cent. of the cases the value was £1 or less. The most common form of larceny is theft from shops and stalls, followed by thefts of pedal cycles, thefts from unattended vehicles, 'larceny by a servant', and thefts from automatic machines and meters. Taken as a whole, cases of larceny increased from 41,045 in 1929 to 51,477 in 1935.

Under the heading 'breaking and entering' (which includes burglary, house-breaking, etc.), the most frequent offence is shop-breaking—which accounts for more than half of the total number of cases. Nearly three-quarters of the persons found guilty of 'breaking and entering' were under 21. The total number of persons found guilty more than doubled between 1929 and 1935.

Frauds and false pretences were slightly up on 1929, but showed a decline from the level reached in 1932. Of the 4,958 offenders, 2,147 were guilty of 'obtaining by false pretences'; 839 were persons under 21.

Sexual offences were slightly higher than in 1929, and 20 per cent. of the offenders were under 17. Roughly, half of the total number of cases related to indecent assault.

Cases of violence against the person (including murder attempts and threats to murder, infanticide, manslaughter, wounding, and other serious offences of violence) show a marked increase since 1929. Of 1,397 offenders, 1,139 were found guilty of 'wounding', and 947 of these cases of 'wounding' were dealt with summarily. One hundred and one murders (exclusive of infanticides) were reported to the police; in 50 of these cases the murderer—or suspect—committed suicide; in 49 cases arrests of 47 persons were made, and in the remaining 2 cases the murderer escaped. Of the arrested persons, 9 were acquitted, 20 were found to be insane, 1 died while on remand, and 17 were sentenced to death; of these, 8 were executed, the sentences of 7 were commuted to penal servitude, 1 was respited and sent to Broadmoor Lunatic Asylum, and in the remaining case the conviction was quashed on appeal.

Finally, the number of suicides and attempted suicides, after steadily climbing from 3,715 in 1921 to 5,657 in 1932, has at last begun to show signs of a check, the number for 1935 being 5,223, of which 32·5 per cent. were women. A similar state of affairs is shown in regard to the number of attempted suicides known to the police.

With regard to non-indictable offences, 57 per cent. of these were accounted for by infringement of the traffic laws, of which 78·5 per cent. related to motor vehicles and 16·7 per cent. to pedal cycles. Cases of obstruction with cars and motor-cycles amounted to 50,103 out of a total of 432,816, while traffic offences as a whole increased by 30 per cent. between 1934 and 1935.

The figures for non-indictable assaults show a decline, but offences by prostitutes are increasing, and more than doubled between the years 1931 and 1935.

In 1936, the number of persons found guilty of drunkenness amounted to 44,525, as compared with 42,159 in 1935 and the astonishingly low level of 30,146 in 1932. From 1920 to 1932 there was a steady decline in offences of this kind, but there has been a steady increase since.

Offences against the Education Acts are steadily declining, the drop between 1931 and 1935 being from 7,318 to 4,768. On the other hand, those against the Bankruptcy Acts increased from 105 in 1934 to 178 in 1935, and the receiving of stolen goods from 2,996 to 3,358. Convictions for offences under the Weights and Measures Acts and Regulations during 1936 numbered 2,067.

During 1937, there were many prosecutions for 'share-pushing' frauds; and in December it was announced in the House of Commons by the parliamentary secretary to the Board of Trade that legislation would shortly be introduced to cover share-pushing and share-hawking, invitations to the public to participate in share, commodity, or metal booms, or in mushroom and soya-bean farms, to control abuses that had arisen under the Industrial and Provident Societies Act, and to amend the Companies Act, 1929.

United States.—A distinguished German criminologist, who visited the United States a few years ago and spent three months in a study of American prisons and crime conditions, declared on his return that the United States was, at the same time, the most criminalistic and the most cruel in its treatment of the criminal of any civilized country in the world. He defined the word 'cruel': sentences of imprisonment for forty years to life for offences which, in England or in Germany, would be punished by confinement for one to three or one to five years. 'But', said he further, 'it is, of course, natural: the same psychology—taking the law into its own hands—working now defensively, now offensively', and giving point to the time-honoured maxim: 'Every country has the crime that it deserves'.

The inordinate sentences imposed for felonious crimes have had the effect of filling United States prisons to a point of dangerous overcrowding. A study of this prison population brings to light two facts of profound significance. The first of these is the youthful immaturity of a great majority of the inmates. The second is the more disquieting discovery that, with rare exceptions, these young felons are what prison language describes as 'repeaters', young 'old offenders', who have previously, almost continuously, served prison sentences or, in childhood, in so-called 'protectories', 'houses of refuge', 'reformatories', and the like.

English and American criminologists have never adopted the so-called 'classical' theory of criminology, fathered by the great Lombroso, which maintains that most, if not all, criminals inherit their criminal tendencies from criminal progenitors. They, on the contrary, believe that crime is a matter of habit—habit formed in childhood, in many cases becoming dominant, as in the habitual criminals that fill the prisons—but, at any stage in its development, curable if proper measures, appropriate to the individual and his environment, are persisted in. Reference was made above to the youthful immaturity of a great majority of the inmates of the State prisons of the U.S.A. A statistical study of one of the largest of these showed that less than 15 per cent. of its inmate population had reached the age of 30 at their last commitment. Only a handful had reached forty.

Crime statistics for 1936 for 987 United States cities with a total population of 35,450,666 are revealed by the following figures of the Federal Bureau of Investigation:

	No. of Offences	No. cleared by Arrest	Percentage cleared by arrest
Murder . .	2,035	1,665	81·8
Manslaughter .	1,547	1,271	82·2
Rape . . .	2,687	2,102	78·2
Robbery . .	21,169	7,855	37·1
Assault . .	14,355	10,338	72·0
Burglary . .	103,598	31,901	30·8
Larceny . .	250,671	64,690	25·9
Motor-car Thefts .	71,858	15,602	21·7

In figures from 68 cities with over 100,000 population, crime increased for all but one category in the first nine months of 1937 as compared with 1936:

	1936	1937
Murder . . .	958	976
Manslaughter . .	568	719
Rape	1,168	1,318
Robbery . . .	8,297	9,443
Assault . . .	7,942	7,915
Burglary . . .	44,645	48,032
Larceny . . .	112,089	128,109
Motor-car Thefts . .	34,516	36,126

Comparative criminal statistics are not available, but it is a generally accepted fact that Great Britain has the lowest crime-rate of any great European community, and it is an indisputable fact that the crime-rate of the United States—especially of crimes of violence, like deliberate or reckless homicide, robbery, and the like—far exceeds that of the mother country.

CRIPPLES, CARE OF: *see* SOCIAL SERVICES.

CRIPPS, The Hon. SIR (RICHARD) STAFFORD (1889–), British politician and lawyer, is the youngest son of Lord Parmoor. Educated at Winchester and University College, London, he was called to the bar in 1913, becoming a King's Counsel in 1927. He first entered parliament in 1931 as Labour Member for East Bristol (which division he still represents), having been appointed Solicitor-General in Ramsay MacDonald's government. Resigning with the other Labour ministers when the National government was formed in 1931, Sir Stafford became one of the leaders of the much diminished Opposition. Controversy soon broke out between him and his colleagues, for he expounded more advanced views than those of other leaders, attacked the monarchy, and made himself the champion of the 'United Front' with the Communist Party and other dissident Socialist bodies. These disputes continued until the autumn of 1937, when the annual conference of the Labour Party, while emphatically rejecting co-operation with the Communists, consented to changes in the party constitution, and elected Sir Stafford and his two associates, William Mellor and Professor Laski, to the executive, Sir Stafford announcing that he would relinquish his public campaign for the 'United Front'. Sir Stafford has written much on Socialism, and is the editor of two legal text-books.

CROISSET, FRANCIS DE, Franco-Belgian dramatist born in Brussels, Jan. 28, 1877; died at Neuilly, Paris, Nov. 8, 1937. Croisset was his legally adopted pseudonym, his family name being Wiener, and his grandfather the Belgian engraver, Jacques Wiener. After graduating in law at Brussels University, Croisset pursued a literary career in Paris. His plays, which earned him a high reputation, include *Chérubin* (1901); *Le Paon* (1904); *Le Bonheur* and *Mesdames* (1905); *Paris–New York* (1907); *Arsène Lupin* (1905, with M. Leblanc); and a number of plays written in collaboration with Robert de Flers, such as *Le Retour* and *Les Vignes du Seigneur*. Croisset's non-dramatic work includes *La Féerie Cinghalaise*; *Nos Marionettes*; *La Vie Parisienne au Théâtre*; *Nous-avons Fait un Beau Voyage*. Croisset was a liaison officer between the French and British armies during the War. He was decorated with the Legion of Honour and the Croix de Guerre.

CROP CONTROL. More intensified activity toward governmental control of agricultural production marked 1937. This movement, of little formidable significance before 1929, has grown rapidly ever since, not only in the three deficit, totalitarian States, Germany, Italy and Japan, but also in the other two principal countries deficient in food and raw products, the United Kingdom and France.

France.—Farmers were granted credit relief in 1937 by a decree deferring payment of certain debts two years. The tendency now is more towards social than economic measures, since previous government intervention established import quotas, tariffs, subsidies, market control, and price fixing for the protection of French agriculture on which about 48 per cent. of the population is dependent, in contrast to the United Kingdom, where only about 7 per cent. is engaged in agriculture.

Germany.—The outstanding extension of government authority in agriculture in 1937 was probably in Germany, where the kind of feed for livestock was fixed by decree, farmers were compelled to surrender all wheat and rye in excess of household and seed requirements and, to encourage early delivery, the government scaled prices so that farmers were penalized for holding back grain. The government also established annual quotas for all grains to be produced by each farm, with a minimum of bread grains, to prevent farmers from planting only feed grains which are not required to be surrendered. The Reich's efforts towards a self-sufficiency goal also decreed that no land must be idle. All farming is supervised, certain crops rigidly restricted, and others encouraged by price fixing, subsidies, loans, and tariffs.

Italy.—No marked changes were made in 1937 in policies by which the Italian Government seeks self-sufficiency in agriculture, by tariffs, price fixing, and subsidies. Italian *per capita* wheat consumption declined from 7·8 bushels in 1925 to 6·5 in 1937, while Italian consumers paid a premium estimated at £560 millions on wheat.

Japan.—Government encouragement has increased Japanese rice production to 85 per cent. of consumer needs, but no material changes developed in 1937 affecting the problems of heavy farm debt and taxation and tenancy, factors causing agricultural depression while industrial development was growing rapidly.

In addition to governmental control of agricultural production, the control by representatives of governments interested in the restriction of certain crops which have been over-produced, still continues. The International Sugar Conference has arranged quotas for five years (*see* SUGAR). The International Tea Regulation Scheme fixed the standard export figures. (*See* TEA.) Rubber exports are arranged by the International Rubber Regulation Committee (*see* RUBBER), while Latin-American coffee-growing countries deal with coffee restrictions (*see* BRAZIL, and COFFEE).

United Kingdom.—The government subsidy for home-grown beef and veal, amounting to 5*s.* per cwt. (9*s.* 4*d.* dressed weight) was changed slightly to afford a premium on extra prime cattle and a lower subsidy on fairly good grades. No substantial changes, however, were made in foreign import quotas, tariffs (including duty-free preferences for Empire countries), subsidies and marketing organizations which have fostered agricultural production in the United Kingdom during the last seven years.

United States.—The government's 'Ever Normal Granary' project was given to Congress in 1937 to evolve laws, probably early in 1938, to establish quotas for production and carry-over so that surpluses and shortages might be avoided and a balance established between lean and fat years. Loans were granted to growers on corn and cotton; soil-conservation practices were encouraged and retirement of submarginal lands and resettlement carried on.

CROQUET. The croquet season of 1937 ran its usual unhurried course, with few incidents or surprises. Chief interest centred upon the visit to England of an Australian team to play a series of five 'Test' matches for the MacRobertson Trophy, the gift of Sir MacPherson Robertson, K.B.E. England won the series by five games to nothing. Thus each country has twice won the trophy on its own soil.

The principal honours went largely according to expectation. A notable exception was the initial success in the open championship of Mr. C. F. Coleman. Miss D. D. Steel, thus deposed as champion of croquet in England, had her full measure of compensation in the winning of the ladies' championship, the ladies' gold medal, and the president's cup, one of the most cherished of honours.

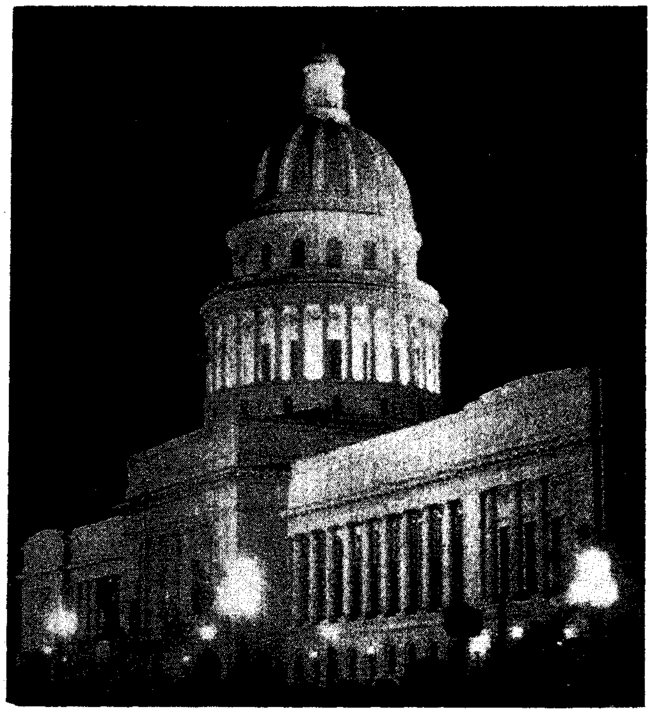
The other principal events resulted as follows:

Men's championship: J. A. McMordie. Men's doubles: Lord Tollemache and Sir Gerald Burke. Men's gold medal: J. A. McMordie. Irish championship: J. C. Windsor. Ladies' field cup: Mrs. B. C. Apps. Mixed doubles: M. B. Reckitt and Mrs. B. C. Apps. The inter-county championship was won by Middlesex.

CROZIER, FRANK PERCY, C.B., C.M.G., D.S.O., British soldier; born Jan. 9, 1879; died at Walton-on-Thames, Surrey, Aug. 31, 1937. He was educated at Wellington, and, after having had, for reasons of health, to abandon the prospect of a military career, took the opportunity of the South African War to enlist in Thorneycroft's Mounted Infantry. During the course of that war he obtained a commission in the Manchester Regiment. Bad health led him to resign his commission in 1909. In the World War he went to France as major with the 9th Royal Irish Rifles, of which he took command in Jan. 1916. In Nov. 1916, he was promoted brigadier-general commanding the 119th Brigade, and from March to April 1919 commanded the 40th Division. From autumn 1919 until March 1920 he was inspector-general and military adviser to the Lithuanian army. His D.S.O. was won in 1917, and his C.M.G. and C.B. followed in 1918 and 1919. In 1921, following his pacifist activities, which, from the disciplinary point of view, were questionable, he resigned. General Crozier married, 1904, Ethel Colb (died 1921), and secondly, 1921, Grace Catherine Croker Roberts. There were two daughters by the former marriage. General Crozier's publications include: *A Brass Hat in No Man's Land*, 1930; *Impressions and Recollections*, 1930; *Five Years' Hard*, 1932; *Angels on Horseback*, 1932; and *The Men I Killed*, which was by far the least fortunate of his books.

CUBA, a republic occupying the largest of the West Indian islands; language, Spanish; capital, Havana; president, Federico Laredo Bru; area, 41,634sq.m. without small neighbouring islands. Population (census, 1931) 3,962,344; (est. 1936) 4,108,650, including about 68 per cent. whites. The chief cities (1930) were: Havana (542,522), Santiago (103,525), Cienfuegos (87,669). The United States has a leased naval base at Guantánamo.

History.—The year 1937 in Cuba was featured by more open military domination of government, increased sentiment against foreign business, and an extensive 'Three-Year Plan' for the nationalization of industry. Since 1933, the dominant political figure had been the 'Cuban War-



London Picture Agency]

THE NATIONAL CAPITOL

wick', Colonel Fulgencio Batista, chief of the constitutional army of Cuba. In the closing days of 1936, refusal of President Mariano Miguel Gómez to approve a Batista-inspired law which placed rural education under control of the army brought about President Gómez's impeachment and removal from office (Dec. 23, 1936). Vice-president Federico Laredo Bru then assumed the presidency. The first months of 1937 saw the elimination of Gómez partisans from official positions, with important changes in the presidency of the House of Representatives and in the diplomatic representation at Washington. While these changes were being effected, Cuban progress was almost at a standstill; but in the rest of the year, significant accomplishments were recorded, including plans for the amortization of the Machado public works debt; a favourable commercial treaty with Great Britain, which granted that country's nationals special exemption from Cuban laws and most-favoured-nation status (except against the United States) and Cuba most-favoured-nation treatment in British markets (except against the British Empire); and, most significant of all, the beginning of a 'Three-Year Plan' for economic and social reconstruction, announced in July by Colonel Batista. In presenting this programme, Batista cast aside all pretence of military non-intervention in civil affairs.

Continued efforts were made by the government to improve the status of labour and industry at the expense of foreign enterprise, by increasing the minimum number of Cubans required on the payroll of each establishment from 50 per cent. to 60 per cent., and by deporting Haitian, Jamaican, and other West Indian labourers (*see* HAITI; DOMINICAN REPUBLIC). Considerable progress was made in the Three-Year Plan which embraced a twenty-point legislative programme regimenting almost every phase of national life, calling for governmental reorganization and regulation of the sugar and tobacco industries; reform of banking and currency and of the tax system; increasingly nationalistic labour legislation; reforestation and water-supply development; distribution of State lands; consumers' and marketing co-operatives; regulation of mining and oil production; judicial reform; creation of a merchant marine; a vast health and education programme and 'nationalization' of property rights. In November, a matter of great concern to Congress was the task of providing machinery for the elections of March 5, 1938, for renewal of half the seats in the House of Representatives and for members of a proposed Constituent Assembly. Another matter, the question of amnesties for political prisoners and exiles, was settled on Dec. 20, by the passing of an Act so sweeping as to embrace all political offenders, including some under death sentence, and to cause the dropping of charges against Machado, the ex-president, an exile since 1933. It likewise covered many criminal offences.

Trade and Communication.—Cuba has numerous good ports and regular, frequent external communication by steamship, with daily service from Havana to Key West, Fla. It is on the main route of the Pan-American Airways, and enjoys external as well as internal air transport facilities. Land communication is provided by a railway system (3,850m., including 250m. electric), based on an east-west trunk line, and a network (2,500m.) of improved roads, dominated by the 706-mile Central Highway, which runs the length of the island. Telephone and telegraph facilities (10,939m.) were outstanding. There were 54 radio broadcasting stations. Exports in 1936 were £30,960,028, of which 79 per cent. went to the United States, 13 per cent. to Great Britain; imports were £20,643,000, 64 per cent. from the United States, with Great Britain and Germany next with less than 5 per cent. each. In the first nine months of 1937, the volume of exports to the United States increased over 24 per cent. The principal export item was sugar, representing over 70 per cent. of the total. Next in importance was tobacco. Imports were foodstuffs, textiles, machinery, and other manufactured articles. An important factor in Cuban economic life was the steadily increasing tourist trade from the United States.

Agriculture, Mineral Production.—Cuba is primarily agricultural, with sugar, above all, and tobacco, the outstanding crops. Due to world over-production, sugar production is restricted by quota. Effective Dec. 31, 1936, a special tax of 9 centavos per bag (325lb.) was laid. Efforts made recently to encourage diversification have not yet shown results. There are valuable and as yet undeveloped iron, oil, and other mineral resources. About one-sixth the area of Cuba is forest land. A valuable sponge industry exists at Batabano. Live-stock estimates in 1934 were 4,515,000 cattle, 952,000 swine, 42,000 sheep, 9,000 goats, 672,000 horses, mules, and asses.

Finances and Banking.—The monetary unit is the peso (value about four shillings). Revenues for 1936–37 were £14,640,000; expenditures were £14,634,526. The 1937–38 budget called for a balance at £15,702,755 with national defence first, education second.

Education.—During the latter part of 1936, the educational system began to emerge from the paralysis caused by the instability prevailing since 1931. Rural education through the army was being pressed in 1937, but with uncertain results. In 1937, there were 1,130 urban, 2,947 rural, 1,011 special, 32 secondary and 48 other schools with a total enrolment of 496,853 students. The 210-year-old University of Havana was in process of reorganization during 1937, following the granting of autonomy in January.

Army and Navy.—The army numbered 1,300 men and 616 officers; the rural guard approximately 6,000 men. The navy consisted of a cruiser, a training ship, a transport, and 13 gun-boats. Both army and navy had aviation branches and academies of instruction. The air force consists of 116 men. (L. W. BE.)

CURAÇAO, a Dutch West India island in the Leeward group, off the coast of Venezuela, with which are included Aruba and Bonaire and the small Windward islands of Saba, St. Eustatius, and St. Martin. Language: officially Dutch. Capital: Willemstad (pop. 27,231). The area of Curaçao is 212sq.m., of the entire colony 436sq.m. Population (1936 census), 90,870, with 58,233 on Curaçao, and 21,638 on Aruba. The colony is administered by an appointed governor and partially elected council. In 1935, imports aggregated 174,164,801 florins in value (Venezuela 79·5 per cent.; the United States 10·3 per cent.; and the Netherlands 3·5 per cent.). Petroleum (principally from Venezuela, with some from the United States and Mexico) represented 82 per cent. and oil machinery, 7 per cent. Exports (1935) aggregated 167,256,839 florins, practically entirely in oil derivatives, chiefly to Great Britain, the Netherlands, and the United States, with 8,040,610 florins value in oil products to ships. Exports (1936) were 201,512,618 florins, of which 200,081,862 florins represented petroleum products. The chief industry of the colony is oil-refining. It is also important as a producer of phosphate. The monetary unit is the Dutch florin. The entire colony (1936) had 49 schools, mostly parochial, with total enrolment of 11,901. The population is over 75 per cent. Roman Catholic.

Fox Photo]

CURLING IN PROGRESS AT ST. MORITZ ON DECEMBER 27, 1937

CURÉ OF YPRES, THE (The Rev. Chanoine Charles Camiel Delaere), one of the most picturesque and heroic figures of the World War, died at the Institute Ste Camille, near Bruges, in Jan. 1937. He had been head of the college at Dixmude, and at the outbreak of the World War was curé of St. Pierre, Ypres. His calm devotion to every possible means of providing relief from suffering and hunger during the disasters that befell his city earned him the admiration of all, and the veneration of those with whom he came in contact. After the War, as dean of St. Martin's Cathedral, he was active in the rebuilding of Ypres.

CURLING. Although there are many hundreds of people in England who reveal their enthusiasm for curling by participation in the sport on the Continent, they do not follow the pastime in their own country consistently. Thus it comes about that the total number of curling clubs in England is only 19, against the 477 clubs which are to be found in Scotland. The Manchester Ice Palace is the only regular curling centre in England.

In view of this disparity in the popularity of the game, it is not surprising that England has not won an International match against Scotland since 1924. Nevertheless, in the two inter-city matches which were played as an experiment during 1937, the First English Province was victorious in Manchester after being defeated in Glasgow.

The League competition for the Newall Cup, for which eight English clubs competed, was won in 1937 by the Liverpool club, who were also successful in the Meggal Memorial Competition, E. Kerr being the skip.

The I'Anson Cup, which carries the championship, was won by J. E. Cowper, Manchester Caledonians, this being the eleventh time he has skipped the winning rink.

The playing rules of curling have recently been revised, but only so far as the phrasing and lay-out are concerned. In substance there have been no changes.

CURRENCY: *see* EXCHANGE RATES.

CUST, ALEEN ISABEL, M.R.V.S., British veterinary surgeon; born at Tipperary, the elder daughter of Sir Leopold Cust, 2nd Bt.; died at Kingston, Jamaica, Jan. 29, 1937. She studied at the New Veterinary College, Edinburgh, and won many prizes, but was not permitted, as a woman, to sit for the first professional examination. She then practised, without a diploma, in Ireland. Her signa services in the World War induced the Royal College of Veterinary Surgeons to allow her to sit for the 'practical' examination only, and, obtaining the highest marks, she became, on Dec. 20, 1922, the first woman graduate to be granted a diploma.

CYPRUS. The year has been one of increased prosperity for Cyprus, and there has been a steady decline in death-rate and infant mortality combined with an increase in the birth-rate. Thanks to favourable weather conditions and continued satisfactory world prices, trade figures have been appreciably higher. During the nine months ending Sept. 30, 1937, imports amounted to £1,601,201, and exports to £1,483,301, being respectively £577,386 and £429,468 more than during the corresponding period of 1936. Conspicuous among the exports were mining products, particularly asbestos, copper-ore, and pyrites. The mining industries of the island are assuming great importance, and the development of its mineral resources is destined to play a great part in its economic future. Public finances were good. Revenue for the year was approximately £100,000 above the estimates, and there will be an estimated surplus of £116,000, which will bring the reserve to £456,000.

CYRENAICA: *see* LIBYA.

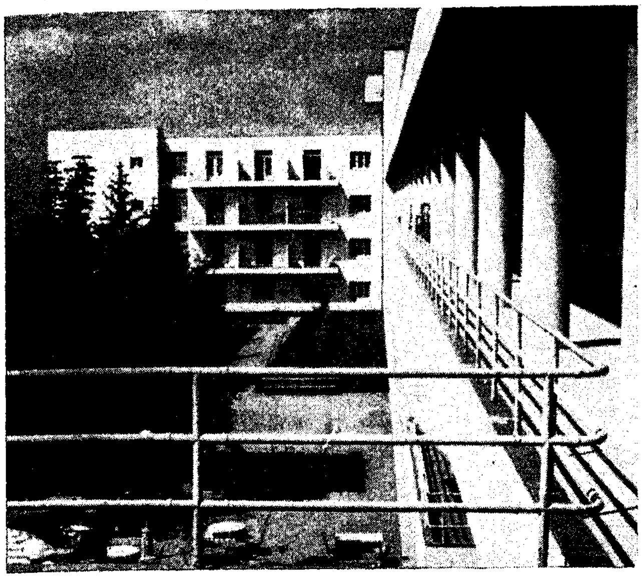
CZECH LITERATURE: *see* LITERATURE OF THE CENTRAL AND SOUTH-EASTERN EUROPEAN COUNTRIES.

CZECHOSLOVAKIA (*Československá Republika*), a republic of central Europe and member of the League of Nations. Bounded W. by Germany, N. by Poland, E. by Rumania, S. by Hungary and Austria. President, Dr. E. Beneš. Flag, blue, white and red.

Area and Population.—The area is 54,244 sq. m. Population: 1936, 15,187,000; 1934, 14,729,536, of whom 9,688,770 were Czechoslovaks (about 7,300,000 Czechs and 2,300,000 Slovaks), 3,231,688 Germans, 691,923 Magyars, 549,169 Ruthenes, Russians and Ukrainians, 186,642 Jews (by nationality), 81,737 Poles, and 49,636 others. There were 249,971 persons not Czechoslovak citizens. The Czechs inhabit chiefly the centres of Bohemia and Moravia; the Slovaks, north and central Slovakia; the Germans the west and north of Bohemia, and north Moravia, forming about one-third of the populations of Bohemia and Moravia; the Magyars, along the southern fringe of Slovakia; the Ruthenes, Carpatho-Ruthenia; the Poles, Silesia. 10,831,696 persons in 1930 were Roman Catholics; 585,041 Greek and Armenian Catholics (nearly all Ruthenes); 1,129,758 Protestants; 145,598 Orthodox (Ruthenes); 356,830 Jews.

Chief Towns.—The chief towns with populations (1930) are: Praha (Prague), 848,823; Brno (Brünn), 264,925; Moravska Ostrava (Mährisch-Ostrau), 125,347; Bratislava (Pressburg, Pozsony), 123,892; Plžen (Pilsen) 114,704; Košice (Kaschau, Kassa), 70,232; Olomouc (Olmütz), 66,440.

Constitution and Political History.—The government in 1937 was in the hands of a coalition, in which the Agrarians were the strongest party. The premier was Dr. M. Hodža, a Slovak. The government resigned on July 16, owing to the refusal of the finance minister to sanction a government subsidy on cereals, but was reconstructed in identical form, except for the finance minister. Internal politics as among the Czechs, and between the Czechs and Slovaks and Ruthenes (who were allowed to advance a short step along the road towards their promised autonomy), were quiet. Interest centred on relations with the national minorities, and especially the Germans,



CZECHOSLOVAKIA. SLIAČ, A MODERN SPA IN CENTRAL SLOVAKIA, WITH MODERN SANATORIUMS, BUILT BY THE STATE FOR INSURED WORKERS

two-thirds of whom belonged to the intransigeant party of Herr Henlein, who enjoyed the open sympathy of the German Reich. On Feb. 20 the government, which had invited the ' activist ' German parties (Agrarians, Social Democrats, and Clericals) to submit their wishes, announced agreement with those parties on five points :

(1) State capital expenditure and government assistance should be distributed according to regional needs. Particular care should be taken to make use of German *entrepreneurs* and workmen in the German districts.

(2) Government subsidies for social welfare and health to be distributed, not only on the basis of population, but also of unemployment.

(3) Subject to the *sine qua non* of loyalty to the State, the government would apply the principle of equitable proportion in appointment to State, etc., posts.

(4) Communications to communes, where an overwhelming proportion of the population speaks a minority language, to be accompanied by translations in that language.

(5) Educational concessions, in which the Poles and Magyars, as well as the Germans, should benefit.

Two demands were refused, as requiring amendment of the Constitution : the creation of Parliamentary Commissions for minority questions, and the use of minority languages in Parliament.

The ' activists ' were prepared to accept these concessions, and most of the Czechoslovak parties agreed to grant them. They were attacked by the Czechoslovak nationalists, and still more by Herr Henlein's party, and by the Reich Press, as insufficient in themselves and unaccompanied by any legislative guarantees. Herr Henlein pressed, amongst other things, for ' Völkische ' autonomy. Nevertheless, relations between the government and the minorities certainly improved. There were two ' incidents ' which led to angry exchanges with Germany, and with the Henlein Party. On June 17 a German citizen of Czechoslovakia was alleged to have been maltreated in prison, and on Oct. 17 some Deputies of the Henlein Party were arrested and roughly handled. On the latter occasion feeling ran so high that the government postponed holding the local elections, and prohibited public meetings throughout the country. On Oct. 8 two leading members of the Henlein Party were arrested on a criminal charge ; one committed suicide in his cell.

The government pinned its foreign policy to the Little Entente and to France. Much satisfaction was given by an assurance from M. Blum, in May, that France would stand by Czechoslovakia if attacked, and by M. Delbos' visit in December. Repeated assurances were given that the Czecho-Soviet Pact concealed no dark mysteries. A ludicrous incident occurred on Aug. 19, when Portugal broke off diplomatic relations owing to a squabble over a munitions contract.

Dr. Masaryk (*q.v.*), founder and first President of the State, died on Sept. 14, aged 87. Dr. Karel Kramař (*q.v.*), another great figure of earlier days, also died.

Trade, Communications, and Finance.—The monetary unit is the Czech crown, originally equal to 2·963 gold cents. This was devalued on Feb. 17, 1934, and again on Oct. 9, 1936, making a total devaluation of 30 per cent. The finances are stable. Budget estimates for the last five years, in millions of crowns, are as follows :

	1933	1934	1935	1936	1937
Revenue . .	8,634	7,632	7,985	8,034	8,456
Expenditure .	8,633	7,631	7,983	8,032	8,454

In both national and party interests, the country is making a determined drive towards autarchy, this being the main cause of the persistent failure to reach a comprehensive trade agreement with Hungary. The Agrarians and Socialists have succeeded remarkably well in reconciling the conflict between producers' and consumers' interests in agriculture. Unemployment in industry has, however, been very heavy, particularly among industries working for export, which are largely situated in the German areas. The registered unemployed exceeded 860,000 in Feb. 1936 and still numbered over 500,000 in April 1937. The index of employment (1929 = 100) ranged from 69·2 to 89·2 in 1936. In March 1937 it was 79·8. The index of industrial activities in 1936 was 91 (av. 1925–29 = 100).

Defence.—Military service is universal and compulsory. The average daily effectives (1937) were 10,221 officers and 178,448 other ranks (army and air force). A law providing for the pre- and post-military service of the whole population of both sexes, between the ages of 6 and 50, was passed on June 25, 1937. In 1936 a law had been enacted investing the government with very wide powers for industrial mobilization for national defence, and establishing a very strict régime in the frontier districts. A decree was also issued providing for the formation of a force of frontier guards organized on military lines.

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DAHOMEY: *see* French W. Africa and the Sahara.

DAIRY FARMING. During 1937 the general conditions affecting dairy farming in Britain were favourable. The summer pastures benefited by alternate periods of medium rainfall and sunshine and a satisfactory level of milk production was maintained. Good crops of hay and average crops of roots were obtained for winter use and, because of an all-round rise in the price of purchased feeding-stuffs, these home-grown products assumed greater importance than usual after the grazing season ended.

The number of dairy cattle declined very slightly during the year, most probably due to a small proportion of farmers reverting to beef production. The number of cattle under milking age showed a definite increase. There was also evidence of a slight decline in milk production in the latter half of the year, due in part to the decrease in the number of cows and in part to the higher cost of feeding-stuffs and labour. In some parts of the country, the difficulty of obtaining competent labour for dairy farms has become acute.

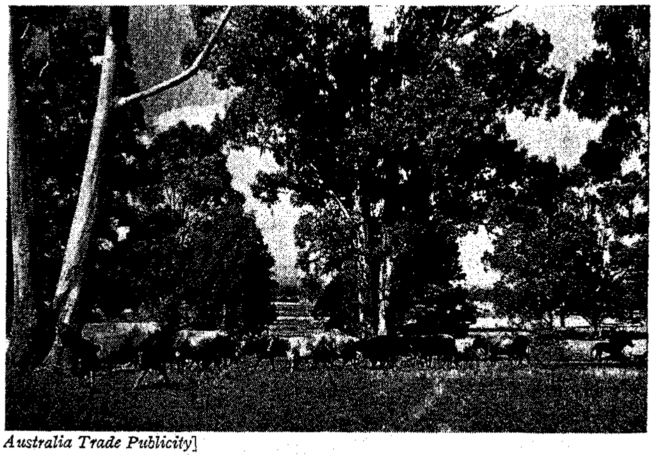
The schemes in operation for improving the hygienic standard of milk production and combating disease in dairy herds have made good progress. The number of herds producing 'Accredited' and 'Tuberculin Tested' milk under the Milk (Special Designations) Order, 1936, have steadily increased. The revision of the Attested Herds Scheme of the Ministry of Agriculture, for the recognition of herds free from tuberculosis, has created widespread interest, and the financial assistance now obtainable is encouraging many farmers to free their herds from this disease. Marked progress has been made in areas in Scotland and Wales where the herds are maintained entirely by home-bred stock. Towards the end of the year, serious outbreaks of foot-and-mouth disease caused the closing of markets, restriction of movement of stock, and the slaughter of a number of herds. The official scheme of milk recording has been reconsidered with a view to improvement, in order that the percentage of recorded herds in the country might be increased, but it has not as yet been found possible to introduce any material changes.

British Empire.—In the Dominions, the wide differences in climatic conditions have naturally influenced dairy farming. In New Zealand, where a phenomenally wet summer was experienced, there was a plentiful supply of pasture even in the dry districts, but the making of good hay was difficult, and many hay crops were converted into silage. There was a slight decrease in the number of cows, but the average yield of butter fat per cow was increased, and there was also a slight increase in the total production of milk. In Australia, dairy farming is developed most fully in Queensland and Victoria. The number of cows is just over 3 millions, or approximately 23 per cent. of the total stock of cattle. Milk production has increased with better weather conditions following periods of severe drought. South Africa experienced a season of extremes of rainfall and drought resulting in a record production of milk early in the year, followed by a rapid fall to a low level. A cattle improvement scheme has been introduced by the Department of Agriculture to assist farmers to keep better bulls. There is also definite evidence that a larger proportion of the milk produced is being required to meet an increased demand for liquid milk. In Canada, the conditions have approximated to the average in the eastern provinces (Ontario and Quebec) where dairy farming is mainly practised. The number of cows is about 4 millions, equal to 43 per cent. of the total head of cattle.

United States.—In the United States, milk provides one-fifth of farm income. In 1937, 24,902,000 cows and heifers more than two years old, were kept on farms for milking purposes. The number of dairy farms is approximately 605,000, but on 4 million other farms there is an average of four milk cows each. Dairying is the largest farm industry in the United States. The 1937 production of milk was estimated by the United States Department of Agriculture at slightly more than 103,000 million pounds. The average milk production per cow for 1937 was 4,358lb. For each 100lb. of milk produced 41 per cent. was utilized as fluid milk, 44 per cent. for butter, 6 per cent. for cheese, 4 per cent. as evaporated or condensed milk or cream (canned), and 3 per cent. for the manufacture of ice-cream. The United States Department of Agriculture announced in 1937 that tuberculosis among dairy herds had practically vanished; virtually all the cattle in 46 states had already been tested, and the remaining herds would soon be inspected.

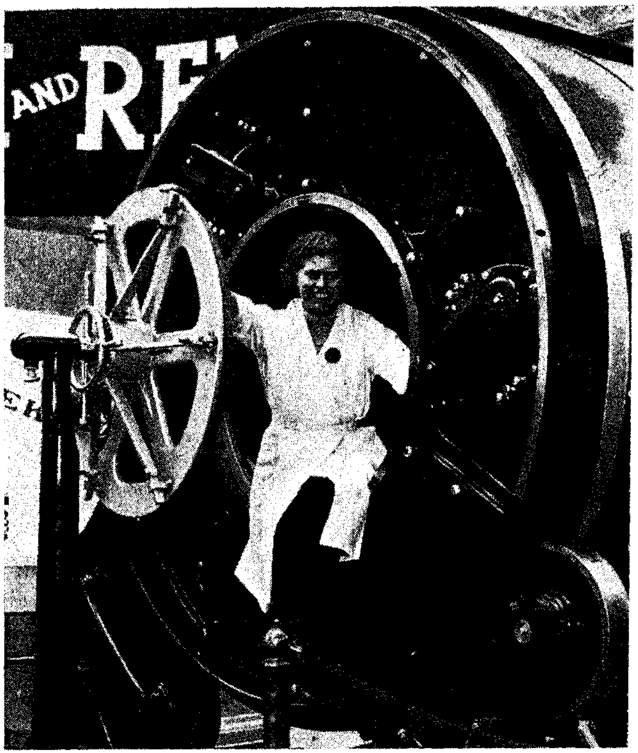
The marketing of milk in the United States is largely carried out by truck (or lorry), and many cities, among them Buffalo, Cleveland, Minneapolis, St. Paul, Kansas City, Columbus, Louisville, Dayton, and Richmond receive all their milk thus. Boston receives 90 per cent. by train and New York 65 per cent. Some cities, however, require by ordinance that milk be produced within 50 miles of the city, to ensure freshness. The dairy industry is greatly concerned over the lack of standardized transportation charges, the University of Illinois having found, as one example, that 15 truck routes hauling milk about 12 miles had freight rates varying from 13 to 30 cents a hundredweight.

The 11th convention of the World's Dairy Congress was held in Berlin, Germany, August 22–28, 1937, at which



Australia Trade Publicity]

A DAIRY HERD AT WARRAGUE, VICTORIA, AUSTRALIA



Sport and General]

A 500-GALLON CHURN THAT PRODUCES 1,500 TO 1,600LB. OF BUTTER PER CHURNING

time the International Dairy Exhibition was also held. The Congress is sponsored by the International Dairy Federation and meets every three years.

Milk, Butter, and Cheese.—*Great Britain.*—In Britain there is evidence that there is a steady, if slight, increase in the consumption of milk, and this fact, together with the slightly lower production, has considerably lessened the proportion of milk available for manufacture into butter, cheese, and other products. About three-tenths of the total output of milk is manufactured, and of this quantity some 35 per cent. is made into butter, 26 per cent. into cheese, 19 per cent. into condensed milk, 13 per cent. into fresh cream, and the remainder into other products. The manufacture of cheese on the farms still continues, but only some 2 per cent. of the milk produced is now used in this way. An increasing proportion is made into the Cheshire variety. The National Mark Scheme for encouraging the manufacture and sale of different varieties of cheese up to a definite standard of quality has made steady progress.

British Empire.—In New Zealand, there was an increase in the total production of milk, resulting in an increase of 4 per cent. and 5 per cent. in the production of butter and cheese respectively. The careful and systematic efforts made by the Dairy Division to improve the quality of these products, by grading, inspection, and testing, and to ensure that only butter and cheese of the highest quality are exported, have been extended, and a larger programme of research work has been undertaken at the Division's laboratory. In Australia, as in New Zealand, the production of butter is much more important than that of cheese, although exports of cheese have tended to increase. The total production of milk and products in recent years is distinctly lower than formerly, owing to unfavourable weather conditions. South Africa does not rank so highly in dairying as the Dominions above mentioned, but there is nevertheless a large butter- and cheese-making industry. Last year the butter production declined slightly, whereas cheese production increased. A complete system of grading is in force to aid in raising the standard of both these products. In Canada also the manufacture of butter is the main feature of the dairy industry. Some 50 per cent. of the total output of milk is made into butter, 8 per cent. into cheese, 2 per cent. into other factory products, and 40 per cent. is used as whole milk. Canadian practice differs from that of other Dominions, in that a large proportion of the butter (some 30 per cent.) is made at farm dairies. (J. MH.)

High Commissioner of New Zealand]

BUTTER READY FOR PACKING, HAWERA DAIRY FACTORY, NORTH ISLAND, NEW ZEALAND

DAKAR: *see* FRENCH W. AFRICA AND THE SAHARA.

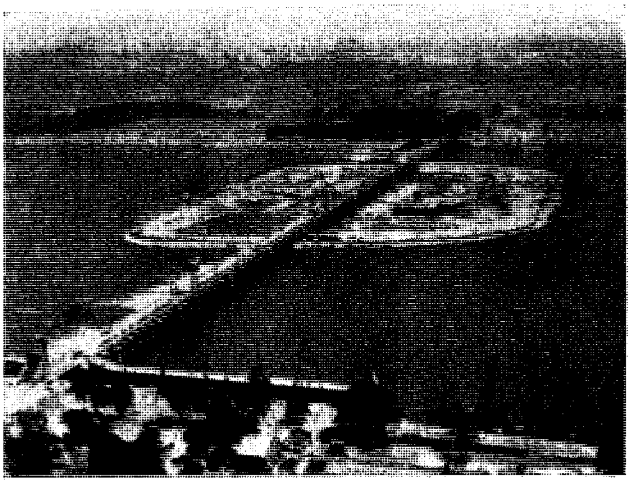
DALEN, NILS GUSTAF, Swedish physicist and inventor; born at Stenstorp, Sweden, Nov. 30, 1869; died at Stockholm, Dec. 9, 1937. A biographical notice is in the *Ency. Brit.*, vol. 6, p. 987. During the 25 years of his blindness he maintained his prominence in the field of invention, turning his attention to matters so diverse as coast lights and domestic-cooking stoves. In 1901 he married Elma Persson, and had two sons and two daughters.

DAMROSCH, FRANK HEINO, American musician; born at Breslau, June 22, 1859; died in New York, Oct. 22, 1937. A reference to his life and work, as well as to those of his father and brother, may be found in the *Ency. Brit.*, vol. 7, p. 8.

DAMS. An interesting development in dam construction in Great Britain is connected with Manchester, which with the surrounding urban areas has derived much of her water from Thirlmere near Helvellyn, 96 miles away. The city has been completing 84 miles of aqueducts and a dam by which Hawes Water becomes a reservoir and the remote but popular village of Mardale, with its inn and church, is largely submerged. In Egypt the dam at Gebel Aulia is of outstanding importance, while the Assuit Barrage and the Delta Barrages are being remodelled. In the Sudan the Sennar Dam on the Blue River has been extended (*see* IRRIGATION).

Notable projects in the fields of irrigation, power, flood control, and navigation have indeed brought dams to the fore in to-day's construction budgets. The Shingmun Dam at Hong Kong, highest in the British Empire, was also completed in 1937. Earthquake danger, high cost of concrete material, and cheap labour dictated this unique handlaid rockfill. It consists of an impermeable upstream panel mounted on a heavy thrust block backed up by the rockfill with a thin wedge of sand in between to equalize the pressure as the rockfill settles (*see* WATER SUPPLIES). Four dams in Algeria are notable for their impermeable upstream faces and extensive drainage systems. Here, too, the rockfill was laid by hand or machine rather than dumped loose, in an effort to build according to a rational design worked out from experimental and theoretical investigation.

In the United States on the Columbia river concrete pours into the forms at Grand Coulee at the rate of over 12,000 yds. per day. The low dam is nearing completion, and the contract is signed for the remaining 300ft. in height which will make it the largest concrete dam in the world. Two major difficulties harassed the contractor in the course of the year: one, a 200,000cu.yd. landslide that threatened to engulf his excavation with a lava-like flow of mud; and, two, a cofferdam leak of 30,000gals. per minute. By the German method of freezing, with some six miles of brine-carrying pipe, an arch dam of frozen mud was built to halt the slide successfully. Bentonite and a fill outside the cofferdam stopped the leak, narrowly averting disaster. Lower down on the river Bonnville has been completed and will be delivering power early in 1938. Here are the much-debated, as yet untried fishways, designed to enable the salmon to get past the dam to and from the spawning grounds and thus preserve the river's $10 million a year salmon industry.


Egyptian Government]

THE ASSUIT BARRAGE—THIRD SEASON'S SUDD

Good progress has been made on Fort Peck on the Missouri river, the world's largest dam. Pending the driving of four concrete-lined diversion tunnels, 25ft. in diameter and 6,000ft. long, the work has proceeded in two sections, one on either side of the river. On June 24 the river was diverted through the completed tunnels, and work on the closure section commenced. On a tributary of the Missouri, the North Platte, Kingsley Dam was begun. It will be second only to Fort Peck in volume. Another notable one is the San Gabriel No. 1 Dam, the highest of its type in the world, completed in July 1937. A record for dams of

Dams in Construction or Completed in 1937

Name of Dam	River	Place	Type	Maximum Height ft.	Crest Length ft.	Volume (cu. yds.)	Purpose*	Built by	Progress*
Bakhadda .	—	Algeria	Rockfill	146	722	420,000	I	—	C
Bartlett .	Verde	Arizona, U.S.A.	Concrete, multiple arch †	270	750	157,725	I	U.S. Reclamation Bureau	U
Bolivar .	Sandy Creek	Ohio, U.S.A.	Earthfill	80	6,300	2,033,000	F	Muskingum Conservation District	C
Bonneville .	Columbia	Oreg.-Wash., U.S.A.	Concrete, straight gravity	170	1,250	596,500	P, N	U.S. Army Engineers	C
Bu-Hanifa .	—	Algeria	Rockfill	180	1,510	1,000,000	I	—	C
Conchas .	South Canadian	New Mexico, U.S.A.	Concrete, straight gravity	220	1,250	647,380	F,W,P	U.S. Army Engineers	U
Fort Peck .	Missouri	Montana, U.S.A.	Earthfill, hydraulic	242	9,000	100,000,000	F, P	U.S. Army Engineers	U
Ghrib .	—	Algeria	Rockfill	233	886	855,000	I	—	C
Grand Coulee	Columbia	Washington, U.S.A.	Concrete, straight gravity	550	4,200	11,250,000	I, F, P	U.S. Reclamation Bureau	U
Hamilton .	Colorado	Texas, U.S.A.	Concrete, multiple arch	158	11,500	189,000	P	Lower Colorado River Authority	C
Haweswater	Haweswater	Westmorland, Eng.	Concrete, hollow buttressed	120	1,550	120,000	W	Manchester Corporation	U
Kingsley .	North Platte	Nebraska, U.S.A.	Earthfill, hydraulic	162	11,000	26,000,000	I, P	Central Nebr. Public Power and Irrigation District	U
Marshall Ford	Colorado	Texas, U.S.A.	Concrete, straight gravity	265	2,500	1,758,700	F, P	U.S. Reclamation Bureau	U
Mohawk	Walhunding	Ohio, U.S.A.	Earthfill	115	2,330	2,263,200	F	Muskingum Conservation District	C
Parker .	Colorado	Ariz.-Calif., U.S.A.	Concrete, constant-radius arch	320	800	260,000	W, P	U.S. Reclamation Bureau	U
San Gabriel No. 1	San Gabriel	California, U.S.A.	Earth and rockfill	381	1,520	10,809,000	F	Los Angeles County Flood Control District	C
Shingmun .	Shing Mun	Hong Kong, China	Rockfill	285	695	641,000	W	City of Hong Kong	C
Taylor Park	Taylor	Colorado, U.S.A.	Earthfill, rolled	168	600	1,000,000	I	U.S. Reclamation Bureau	C
Tygart River	Tygart	W. Virginia, U.S.A.	Concrete, straight gravity	232	1,850	1,100,000	F	U.S. Army Engineers	C
Vaalbank .	Vaal	South Africa	Concrete, gravity	160	1,700	220,000	W, I	Transvaal Irrigation Department	U

* I = Irrigation, F = Flood Control, P = Power, N = Navigation, W = Water Supply, C = completed in 1937, U = under construction in 1937.

† Highest in world.

this type was believed to have been set in May when 964,556cu.yds. of fill were placed during the month. Below Boulder Dam on the Colorado river, Parker Dam, unique in its unprecedented depth of excavation to bedrock, saw that difficult task accomplished this year. Of the 320ft. height of this dam 235ft. will be beneath the stream-bed. Over 50 per cent. of the concrete is now in place.

Data on other important dams will be found in the accompanying table. (*see* also TENNESSEE VALLEY AUTHORITY.)

DANCING. In the ballroom, 'swing music', has exercised a considerable amount of influence, and in England the 'Imperial Society of Teachers of Dancing' has attempted to arrange a routine of steps to fit it. In the United States, where swing originated, dance movements with a decided 'hop' effect have shown a tendency to become popular, especially among the college boys and younger folk. Such movements have many curious names, but collectively they are known as 'shag'.

In the autumn a curious dance known as the 'Big Apple' arrived in New York. It came from Columbia, South Carolina, where a small abandoned synagogue had been converted into a night-club called 'The Big Apple'. It is danced in a circle by a number of couples and a 'caller', who nominates the steps to be performed. These are mostly of a shag, charleston, or truckin' nature, and are generally a little eccentric, particularly when a solitary couple is called to the centre to 'shine' —that is, to show off and execute the strangest steps they can.

In England the quick or 'old time' waltz has been very much in evidence in the West End, but the rumba, which is still in favour in the United States and in France, has made very little headway. In the English popular ballrooms, where dancing is taken more seriously, there has been a great revival of interest in competitions in the four standard dances—waltz, slow foxtrot, quickstep, and tango—and the British Championships (*Professional winners*—Adela Roscoe and Cyril Farmer; *Amateur*—Renée Sissons and John Wells) were again broadcast. Competitions on a large scale have been held in Germany at which representatives of many nations competed. The English amateur champions won the more important of these. In February in Copenhagen, a team of English amateurs just managed to defeat a team of Danish amateurs—Herr Max Wendt of Hamburg being the sole adjudicator.

Educational Pictures]

A DEMONSTRATION OF 'THE BIG APPLE'

In Paris, the conga was revived and met with a certain amount of popularity.

In England, 'Formation Dancing' has attracted some attention, and numerous teams have been formed throughout the country. Denmark and Germany are also interested.

In the autumn, the University Extension Committee of the University of London organized a series of six lectures dealing with the 'History, Meaning, and Influence of the Dance', which were delivered in the Senate House.

During 1937, The Royal Academy of Dancing, which had been given a charter early in 1936, sent examiners to South Africa and also to Australia and New Zealand. About 7,000 candidates took the Academy's 'Children's Examinations' during the year.

The English Folk Dance and Song Society celebrated its Silver Jubilee year with its usual dance festival at the Royal Albert Hall in January, and in June was responsible for a massed folk dance display by nearly fourteen hundred dancers, which formed one of the features of the 'Festival of Youth' at Wembley. (P. J. S. R.)

DANUBE, CONTROL OF. This was vested after the War in two bodies: the European Commission, controlling the mouths, and composed, since the War, of representatives of France, Great Britain, Italy, and Rumania; and the International Commission, established in 1921 with seat in Bratislava (since 1927, in Vienna). This was intended to control the Danube from the limits of the European Commission's jurisdiction up to the highest navigable point, Ulm. All the riparian States, with France, Britain, and Italy, were represented. On Nov. 14, 1936, Germany resigned from this Commission and refused to recognize its competence in German waters, alleging that it constituted an 'inequality' against her, and also that her efforts to be reinstated on the European Commission, whence she had been dislodged under the Treaty of Versailles, had been unsuccessful. (C. A. M.)

DANZIG, an important port on the Vistula river, near the Baltic sea, was taken from Germany after the World War and created a Free City, sovereign in some respects, controlled by Poland in others, and supervised by a high commissioner appointed by the League of Nations. Its area is 754sq.m. and its population 407,000, of whom 291,000 live in Danzig itself, the remainder in the surrounding rural districts. As Danzig had been under the Teutonic Knights from 1308 to 1454, under Poland from 1454 to 1793, and a part of Prussia from 1793 to 1919, it was furiously coveted by both Germany and Poland, even after its establishment as a Free City. Centuries-long emotional hatreds caused bitter German-Polish friction and constant appeals to the League of Nations for fifteen years after its separation from Germany.

With Hitler's coming into power in Germany in 1933, the German-Polish friction decreased, but the conflict between the Nazis and the anti-Nazis in Danzig increased. Hitler's ten-year treaty with Poland of Jan. 26, 1934, agreeing that neither country would use force against the other, and the agreement of Nov. 5, 1937, guaranteeing equal treatment of minorities, greatly improved the relations between the two countries. Poland's new port of Gdynia, founded soon after the World War, connected by railway with Warsaw, and favoured with Polish capital and railway rates, grew with such mushroom rapidity that its volume of trade exceeded that of Danzig by 1933; in 1936, 4,920 ships cleared at Gdynia and only 3,195 at Danzig. Poland's power of diverting trade to the rival port of Gdynia threatened economic disaster to the old Hanseatic city. The bitterness felt by the Danzigers because of this was somewhat lessened by the Danzig-Polish harbour agreement of Aug. 5, 1933, by which the two ports were to share equally in Poland's trade.

Hitler regards the Germans in Danzig as part of the German folk, and the Nazis there are organized under the aggressive Nazi district leader, Arnold Förster, as part of the German Nazi Party. In 1933, the Danzig Nazis, aided from Germany, began to use the strong-arm methods of their party brethren in the Reich, employing Brownshirts and the policy of co-ordination (*Gleichschaltung*) to get control of the Danzig government. The high commissioner tried to protect the rights of Liberals, Catholics, Jews, and Poles, but he fought a losing fight. Trade unions and opposition newspapers were suppressed, and opposition leaders were placed under 'protective arrest'. The Communist Party was forbidden in May 1934, and the Social Democrats in Oct. 1936. Arthur Greiser, a radical Nazi who became president of the Danzig senate in Nov. 1933, was called to account by the League of Nations in Jan. 1936, but in the following June he came to Geneva and made a defiant speech demanding the end of League control. His dissolution of the Catholic Centre Party in Oct. 1937 finally gave the Free City completely into the hands of the Nazis. *See* article DANZIG in *Ency. Brit.*; and Ian F. D. Morrow, *The Peace Settlement in the German-Polish Borderlands* (Oxford University Press, 1936). *See* also LEAGUE OF NATIONS. (S. B. F.)

DARDANELLES : *see* TURKEY.

DAVIDSOHN, ROBERT, German historian; born at Danzig, April 26, 1853, of Jewish parents; died in Florence, where he lived much of his life, Sept. 18, 1937. Dr. Davidsohn's publications include: *Von Nordcap bis Tunis* (1884); *Phillipp II, August von Frankreich und Ingeborg* (1888); *History of Florence* (his chief work, in 7 vols., of which the first appeared in 1896); and many contributions to German and Italian reviews.

DAVIS, NORMAN HEZEKIAH (1878–), American banker and diplomat, born in Tennessee; he became prominent in the commercial and financial life of Cuba in the early years of the century; in 1917 was appointed Foreign Loans adviser to the Treasury; became in 1919 a member of the Armistice Commission and of the Supreme Economic Council; and was Under-Secretary of State from 1920 to 1921. Frequently a member of U.S. delegations to Geneva and to disarmament conferences, in March 1933 he was accorded the rank of ambassador, and a month later took part in the World Economic Conference in London, at which he maintained that economic appeasement must precede any world-wide political appeasement. In Dec. 1935 he headed the American delegation to the Five-Power Naval Conference in London, which resulted, on March 25, 1936, in the signature of a six years' Naval Treaty by Britain, the United States, and France—Japan (who had previously withdrawn) and Italy refraining. In April 1937 Mr. Davis represented the U.S.A. at the International Sugar Conference in London; in May he was awarded the Woodrow Wilson Foundation Medal for his work in the advancement of better international relations; and in November was again in Europe leading his country's delegation to the Far Eastern Conference in Brussels, at which he made a firm stand for the respect of treaties and observance of the pledged word.

DEATH DUTIES : *see* TAXATION.

DEATH STATISTICS. Adequate death statistics are available for about one-third of the population of the earth. They are rather more complete than birth statistics for times of peace, but are usually defective for war years. In western and northern Europe the yearly number of deaths increased from 2,421,000 in 1841–45 to 3,114,000 in 1891–95. It decreased slightly in the following years, but averaged about 3,470,000 in 1915–19. From 1920 to 1936 it varied between 2,317,000 (1934) and 2,598,000 (1922) without showing any marked tendency. For the white population of the British Empire it increased from 795,000 in 1921–26 to 825,000 in 1927–36.

The simplest method of relating deaths to population is to compute the yearly death-rate, *i.e.* the rate of deaths per 1,000 inhabitants. The death-rate in western and northern Europe dropped from 23 in 1841–85 to 17 in 1911–14. In 1923–36 it oscillated around 13. It averaged nearly 12 in 1921–36 both for the white population of the British Empire and for the entire population of the United States.

DEATH-RATES, 1881–85 AND 1933–36

Country (Present Territory)	1881–85	1933–36
AUSTRIA	28·1	13·2
BELGIUM	20·7	12·6
BULGARIA	27·8 (*a*)	14·5
CZECHOSLOVAKIA	24·4 (*b*)	13·4
DENMARK	18·4	10·8
ENGLAND AND WALES	19·4	12·0
SCOTLAND	19·6	13·2
NORTHERN IRELAND	19·0 (*c*)	14·2
IRISH FREE STATE	17·6 (*c*)	13·8
FINLAND	22·2	12·6
FRANCE	22·3	15·5
GERMANY	25·6	11·4
HOLLAND	21·4	8·6
HUNGARY	32·9 (*d*)	14·7
ITALY	27·3	13·6
NORWAY	17·1	10·2
POLAND	30·1 (*e*)	14·2
RUMANIA	26·5	20·1
SPAIN	32·6	15·9 (*f*)
SWEDEN	17·5	11·5
SWITZERLAND	21·3	11·6
YUGOSLAVIA	24·8 (*d*)	17·0 (*g*)
AUSTRALIA	15·7	9·3
NEW ZEALAND	11·0	8·4

(*a*) Pre-war territory, 1891–95.
(*b*) 1901–05.
(*c*) 1881–90.
(*d*) Pre-war territory.
(*e*) 1880–81.
(*f*) 1933–35.
(*g*) 1933–34.

The crude death-rate shows the proportion by which a population decreases through deaths, but it is not an adequate measure of mortality, since it is calculated without regard to the age composition of the population. The best method of eliminating the disturbing influence of the age composition is to compute a life table.

According to the life tables computed for the 1890's, the mean expectation of life of the newly-born was 58 years in New Zealand, 53 years in Australia, 52 years in Sweden and Norway, 50 years in Denmark, 48 years in Holland, 47 years in Belgium and Switzerland, 46 years in England and Scotland, 44 years in Finland, 42 years in Germany, 37 years in Austria, and 31 years in Russia (including Siberia). In no country did the mean expectation of life reach 60 years before the twentieth century. It now exceeds 60 years in Denmark, Norway, Sweden, England, Germany, Holland, Switzerland, the United States, Australia, and New Zealand. In 1933 it was 61 years in England and 68 years in

EXPECTATION OF LIFE AT BIRTH AND DEATH-RATES OF STATIONARY POPULATION

Country	Period	Mean Expectation of Life in Years		Death-rate	Period	Mean Expectation of Life in Years		Death-rate
		Males	Females			Males	Females	
AUSTRIA	1866–75	30·38	33·10	31·5	1930–33	54·47	58·53	17·7
BULGARIA	1899–1902	39·99	40·33	24·9	1925–28	45·92	46·64	21·6
DENMARK	1835–44	40·87	43·31	23·8	1931–35	62·0	63·8	15·9
ENGLAND AND WALES	1838–54	39·91	41·85	24·5	1936	60·13	64·43	16·1
SCOTLAND	1861–70	40·32	43·85	24·0	1930–32	56·0	59·5	17·3
NORTHERN IRELAND	1890–92	46·3	45·7	21·7	1925–27	55·42	56·11	17·9
IRISH FREE STATE	1890–92	49·1	49·2	20·4	1925–27	57·37	57·93	17·3
FINLAND	1881–90	41·39	44·18	23·4	1921–30	50·68	55·14	18·9
FRANCE	1840–59	39·30	40·99	25·0	1928–33	54·32	59·04	17·7
GERMANY	1871–80	35·58	38·45	27·0	1932–34	59·86	62·81	16·3
HOLLAND	1840–51	34·94	37·76	27·5	1921–30	61·9	63·5	16·0
ITALY	1876–87	35·1	35·4	28·4	1930–32	53·76	56·00	18·2
NORWAY	1821–30	45·0	48·0	21·5	1921–30	60·98	63·84	16·0
SWEDEN	1755–75	33·9	36·6	28·4	1926–30	61·19	63·33	16·1
SWITZERLAND	1876–80	40·53	43·19	23·9	1929–32	59·25	63·05	16·4
U.S.S.R.	1896–97	29·43	31·69	32·8	1926–27	40·23	45·61	23·3
UNITED STATES (Whites)	1900–02	48·23	51·08	20·2	1935	60·72	64·72	16·0
AUSTRALIA	1881–90	47·20	50·84	20·4	1932–34	63·48	67·14	15·3
NEW ZEALAND	1891–95	55·29	58·09	17·6	1931	65·04	67·88	15·1
INDIA	1881	23·67	25·58	40·7	1931	26·91	26·56	37·4
JAPAN	1898–1903	43·97	44·85	22·5	1926–30	44·82	46·54	21·9

New Zealand. The above table shows for various countries the mean expectation of life of newly born boys and girls in the earliest period for which an adequate life table is available, and also in recent years. It shows furthermore the death-rates of the stationary population, *i.e.* the correct death-rates, derived from the life tables.

In New Zealand, where actual mortality is lower than in any other country of the world, the correct death-rate is now 14·7. It is hard to conceive how it will ever be anywhere much lower, because a correct death-rate of 13 would presuppose a mean expectation of life of 77 years. On the other hand, the correct death-rate still exceeds 20 in many countries of Europe, and it exceeds 30 in vast areas of Africa and Asia. (R. R. K.)

DECCAN STATES. This group of small States in India which were formerly supervised by the Bombay government, is now in charge of an agent to the governor-general. The total area is 10,851sq.m. and population 2,465,670. In respect of Kolhapur (ruler, Maharaja Sir Rajaram Chartrapati, with a salute of 19 guns) the agent has the title of resident: its area is 3,127sq.m. and population just under a million. There are 16 less important States.

DEGRELLE, LÉON (1906–), Belgian political agitator, was born of wealthy parents, and for some years practised as a lawyer. In 1935, he became conspicuous as the leader of a noisy group of youths in the Catholic Party, and formed within it the 'Rex' (originally Christus Rex) movement, with the ostensible object of cleansing it from its impurities. This quickly became violently political, spreading scandalous charges against ministers, ex-ministers, and others, particularly among the Catholics, Liberals, and Socialists; and at the general elections in 1936, 21 'Rexists' were returned, thanks mainly to an intensive propaganda and to funds suspected of being of Nazi origin since Degrelle entertained close relations with Germany. In October of that year, he visited Dr. Goebbels in Berlin and, while attempting on his return to organize a vast demonstration in Brussels, was arrested, but released the following day.

In Jan. 1937, forbidden to broadcast in Belgium, he was allowed by the Italian Government to use the Turin transmitter, and seized the opportunity of attempting to spread Fascism at home. In March, in order to test popular feeling and confident of success, one of his followers resigned his seat and Degrelle stood for election; M. van Zeeland, the premier, opposed him; the result (v. Z., 275,840; D., 69,242) was a great set-back for the Rexists and a striking victory of democracy over Fascism.

In June, the coalition between the Rexists and the Flemish Nationalists, which had existed since the previous October, was broken at the instance of the latter; and in July, M. Degrelle was sentenced to four months' imprisonment (which were not served) for libelling M. Jaspar, the minister of transport.

DELAERE, CHARLES CAMIEL: *see* CURÉ OF YPRES.

DELAWARE: *see* UNITED STATES OF AMERICA.

DELBOS, YVON (1885–), French journalist and statesman, member of the Radical-Socialist Party, minister of education 1925, of justice 1936, and foreign minister, 1936 to 1938. In Jan. 1937, unveiling a war memorial at Châteauroux, M. Delbos, in reply to Hitler's Reichstag speech of the previous day, emphasized the need for Franco-German understanding and for both countries to find new markets so that industrial expansion might replace rearmament. After representing France at the Nine-Power Conference (*q.v.*) at Brussels on Nov. 3, M. Delbos expounded French foreign policy in a debate in the Chamber on Nov. 18–19, emphasizing Anglo-French friendship and the necessity for its maintenance. Ten days later he visited London with M. Chautemps to receive a report from Mr. Chamberlain and Mr. Eden on the result of the Halifax-Hitler talks. Afterwards, he set out on a tour of the central

Wide World Photo]

M. YVON DELBOS

and eastern European capitals, visiting Warsaw on Dec. 3, Bucharest on Dec. 8, Belgrade on Dec. 12, and Prague on Dec. 15, in each case discussing the European situation with the ministers of the countries in question, and seeking to foster their friendly relations with France. On Dec. 10 it was announced that a plot to assassinate him at Prague had been discovered by the French police ; the prospective assailant was arrested. M. Delbos was reappointed foreign minister in the reconstructed Chautemps government in the third week of Jan. 1938, but was excluded from the Blum cabinet in March 1938.

DELHI. This is the name both of the city which is now the capital of British India, and of the *enclave* in the Punjab, which constitutes a small separate province round the capital.

Delhi Province has an area of only 573sq.m., but its population, including Delhi City, is 636,246. It is a chief commissionership, designed only to give elbow-room for the city and the seat of the central government. Within its area lie also the ruins of ancient Delhis and their historic monuments, the Kutb Minar, Humayun's Tomb, etc. Its centre is New Delhi, the metropolis which has been gradually rising since 1912 on a rocky plain outside the city, to house the legislature and offices of the central government, the viceroy, and the members and officials of the future federal administration.

Delhi City has a population, including that of New Delhi, of 447,442, of whom 55 per cent. are Hindus and 40 per cent. Moslems. It has a municipal committee of 38 members and an income of £225,000. An important railway junction, it is the chief mart in Northern India for grain, and does an extensive trade in oriental *objets d'art*, jewellery, ivory carvings, miniature paintings, etc. (Me.)

DEMOCRACY. Democracy literally means ' government of the people '. As the term is used to-day, in reference to the great States of the modern world (such as France, Great Britain, and the United States), it does not mean—as it did in antiquity—direct government by the people itself through a popular primary assembly. It means an indirect form of popular government through a popularly elected parliament representative of the people. Modern democracy is thus connected with representative institutions : it is parliamentary democracy. This is not all. Beyond the parliament there stands an executive government which either proceeds from and is responsible to the parliament (in which case we generally speak of cabinet government), or proceeds from and is responsible to the people, in the same way and on the same footing as parliament (in which case we may speak, as in the United States, of presidential government). In either case, the executive government is a responsible government. We may therefore say that modern democracy involves the two factors of a representative parliament and a responsible government. But there is a further and cardinal factor of modern democracy. If the people is to choose its representatives freely, there must be a number of parties (not a single party, but at least two, and possibly more than two), which submit their policies and the candidates who represent those policies to the verdict of a popular electorate. Democracy is not possible in a single-party State. This constitutes a line of division between democratic States and States both of the fascist and the communist type which adopt alike (however much they may otherwise differ) the principle and the practice of the single party. In the modern ' conflict of ideologies ', as it is often called, there is thus not only a conflict between Communism and Fascism, though that is often particularly emphasized ; there is also a conflict, and a deep conflict, between States of both of these types and democratic States.

The fact that democratic States necessarily possess more than a single party and that they necessarily involve debate between parties, and a national choice (or a nationally agreed compromise) between their different policies, leads to a further definition of the nature of democracy. Democracy is essentially a method of government by discussion—free discussion—in which different alternatives are freely submitted to the people and the people freely decide between them. In this method of government by discussion there are four stages and four organs. The first stage is the formulation of programmes and the presentation of candidates who represent these programmes ; and the organ of this stage is party—or rather parties. The second stage is that of electoral discussion of programmes and electoral choice among candidates ; and the organ of this stage is the electorate. The third stage is that of discussion, by the members who have been chosen by the electorate from the different parties, of the lines of policy to be adopted by the legislature and to be expressed in legislation ; and the organ of this stage is parliament. The fourth and last stage is that of the final discussion and decision of policy (both foreign and domestic) by a responsible governing body which is united by a common party allegiance, which is confronted and criticized by an opposition united by a similar allegiance, and which keeps in close touch not only with the party (or union of parties) on which it is based, but also with the general body of the electorate and the parliament.

Two things may be said of this democratic system of government by discussion. The first is that its successful working depends on a proper harmony or balance between the four organs concerned in the system. Each must play its part : none must exaggerate its importance and its rights. The particular danger of democracy is an exaggeration of the importance and the rights of party. When party-spirit and the party struggle are exaggerated and exacerbated, the result may be a party-battle in which one party triumphs and proceeds to exterminate the rest. This means the institution of the single-party State, and that means the death of democracy. The second thing which may be said of the democratic system of government is that it necessarily entails a regular and recognized opposition. The whole process of discussion would fail, and cease, in the absence of an opposition. In Great Britain, and in democratic States of a similar type in which the method of cabinet government is adopted, an essential and cardinal feature of the whole system is that a cabinet *in esse*, an actual cabinet, is confronted and criticized by a cabinet *in posse*, a potential cabinet (or, we may even say, an ' anti-cabinet ') which is constantly trying to evict and succeed the actual cabinet.

The evils which may be alleged against such a method of government are the evils of possible dissension ; of possible delay in the decision of vital issues ; of the possible failure of the government to secure the realization of its policy, and of its possible decline into a method of compromise with the opposition which emasculates its vigour and produces no definite or clear-cut results. On the other hand it may be said that debate is not necessarily dissension ; that haste is not always speed ; and that compromise is often the way of wisdom and of safety. In any case, as long as men have minds and opinions in their minds, they are necessarily bound to use their minds and to urge their opinions. In this sense, and from this point of view, democracy may be said to be based on the rock of human nature.

A good short book on the subject is R. Bassett's *Essentials of Parliamentary Democracy.* Lord Bryce's *Modern Democracies* now seems to belong to the past (1921); but it is still a storehouse of experience. Miss Headlam-Morley's *New Democratic Constitutions of Europe* (1928) is also in part superannuated; but it may be still commended. (E. B.)

DEMOCRATIC PARTY. With the re-election of President Roosevelt in Nov. 1936, the Democratic Party retained control of the United States administration, and increased its already large majorities in both House and Senate. In 1937, the governors of 39 States were Democrats, as were the mayors of most of the larger American cities. Postmaster-General James A. Farley remained as chairman of the Democratic National Committee.

On several legislative issues, the Democrats in Congress were sharply divided. Many Democrats opposed the President's proposal to enlarge the membership of the Supreme Court, and many opposed other Administration measures—notably the Wage and Hour Bill, the Governmental Reorganization Bill, and the Agricultural Control Bill. As the year ended and the special session adjourned on Dec. 21, it was evident that the majority party in Congress was still sharply divided on many issues.

On July 21, Senator Alben Barkley of Kentucky was elected Democratic leader of the senate, to succeed the late Senator Joseph T. Robinson of Arkansas. In the House, William B. Bankhead of Alabama held office as speaker, with Representative Sam Rayburn of Texas as Democratic floor leader.

The scattered elections held in 1937 gave no evidence of any marked recession in the popular strength of the Democratic party. Though Bruce Barton (Republican) was elected to the House in a special election in New York city in November, to fill a vacancy in the 17th district caused by the death of the late Theodore A. Peyser, Lawrence Connery (Democrat) was elected by 3,000 majority in the seventh Massachusetts district to succeed his brother, the late William P. Connery. With some Republican support, Maurice J. Tobin (Democrat) was elected mayor of Boston in a contest in which party lines were broken down.

The New York city election in November, which resulted in the re-election of Mayor Fiorallo La Guardia on a coalition ticket, was the most important election of the year. La Guardia won by a majority of 453,374 over his Democratic opponent, Judge Jeremiah T. Mahoney. The New York election was significant for three reasons: first, in dealing a smashing blow to Tammany Hall, of old the dominant political organization in the city; second, because of the surprising strength shown by the American Labor Party, which polled about 480,000 votes in its second appearance on the New York city ballot; and, third, because in the defeat of Justice Mahoney, the regular Democratic organization lost its bid to recapture control of the city's political organization, held by La Guardia for the past four years.

At the close of the year, the Democrats held 76 seats in the Senate, and 330 in the House of Representatives. (*See* also ELECTIONS, UNITED STATES.)

DENMARK (Dan. *Danmark*), kingdom of north-central Europe, member of the League of Nations. Bounded N. and E. by Baltic waters, S. by Germany, and W. by the North Sea. Capital, Copenhagen. Ruler, King Christian X (born 1870; succeeded 1912). National flag, a white St. George's cross on a red ground.

Keystone]

THE KING AND QUEEN OF DENMARK DURING THE SILVER JUBILEE CELEBRATIONS

Area, Population, and Cities.—Area: 16,575sq.m.; population: (1935 census) 3,706,349:

Division	Area (sq. m.)	Population (1935)
COPENHAGEN (City)	28	666,269
BALTIC ISLANDS	5,136	1,367,845
JUTLAND PENINSULA	11,411	1,672,235

Administratively, the country is divided into 21 counties (*Amter*).

The established church is Lutheran, and though religious toleration is complete, less than 50,000 hold other or no beliefs.

Primary education is compulsory; in 1935, 4,556 schools had 495,000 pupils, Copenhagen University over 5,000; secondary specialized schools are diverse and numerous.

Leading towns (1935 populations): Copenhagen, 843,168; Aarhus, 90,898; Odense, 76,116; Aalborg, 48,132; two others averaged 30,000.

History for the Year 1937.—The king shares legislative power with a parliament (*Folketing*, 149; *Landsting*, 75). Suffrage is universal (over 25), representation proportional. The premier and 11 ministers form a State Council, acting under the king's presidency.

Domestic events included celebration of the Silver Jubilee of the king's accession (May), the wedding of Princess Feodora, eldest daughter of the king's brother, Prince Harild, to Prince Christian of Schaumberg-Lippe (September), and, in September, the opening by the king of the Storstroem Bridge, the longest in Europe (over two miles, linking Masnedö and Falster islands, and shortening the Copenhagen-Berlin rail-journey by 50 minutes; built with British steel and in part by British labour). A bomb was ineffectively exploded outside the house of the defence minister (June).

The Army and Navy Bill (February) made modest proposals, with no increase in the air force. Hr. Stauning, the premier, commented (Stockholm; March) on a defensive alliance between the northern democracies, and visited London (April) relative to Anglo-Danish trade, Denmark having increased her British imports by 70 per cent. during

1931–36. In December the king and queen visited England privately.

Trade, Communications, and Finance.—The staple products are bacon, butter, and eggs, very largely exported to Great Britain. Imports for 1936: 1,484,084,000 kroner (£66,254,000); exports: 1,379,642,000 kroner (£61,591,000); both showing rises maintained in half-1937.

Mercantile marine: 2,046 ships (1,187,200 tons). Mileage: railway (half State-owned), 3,200; road (main), 4,796. Telegraphs and telephones are well developed.

The currency unit is the *krone* (at par, 18·16 kroner = £1 = $4.87). Notes in circulation by National Bank (1936): 398,558,000 kroner.

Budget estimate for 1938–39 (largest on record): revenue 477,000,000, expenditure 475,000,000 kroner.

Defence Forces.—National militia, 14,000 all ranks; 65 aeroplanes. Navy, 2 coast defence, 5 fishery patrol, 8 submarine, and smaller craft.

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DENTISTRY. The science and practice of dentistry has never been less static than at present. Although 1937 was not noteworthy for any outstanding advance or discovery, a number of important researches were tested, with valuable practical results.

Public interest in dentistry centres on the commoner diseases manifested in and around teeth, their cause, effect, and treatment, and, as the result of educational schemes and physical fitness campaigns, the layman is undoubtedly acquiring an intelligent conception of such problems as dental decay, pyorrhoea, and the possibility of remote harmful influences of the dead tooth.

Statistics of extended research on auto-intoxication show that of all possible foci, dental sepsis is the most frequent source of infection. Dental sepsis may exist either as a focus at the apex of a tooth root in which the nerve has died or been removed, or it may obtain around the neck of the tooth as a suppurating pocket extending from the gum margin.

Death of the nerve or dental pulp most frequently results from an undetected tooth cavity encroaching upon the nerve chamber and exposing the delicate organ it contains. As this tooth nerve has no resistance to such invasion, it becomes infected and dies, and so micro-organisms and toxic tissue breakdown-products seep through the foramina at the apex of the root into the surrounding tissues. At this site the micro-organisms become active, and in time induce destructive charges in the bone of the region, while their toxins are absorbed and may give rise to remote symptoms of disorder in the digestive tract, in the cardiovascular system, or in the nervous system. Similarly, by causing alteration in the articular surfaces of the joints, it may produce marked disturbances in the locomotor system. The eyes are also frequently affected, either by direct extension or by means of blood-borne infection, and symptomatic treatment of the eye condition alone is of little avail without elimination of the dental factor.

Despite some divergence of views, the concensus of opinion is that where symptoms suggesting toxic origin obtain, pulpless teeth which are revealed by X-ray examination to be doubtful or infected should be extracted.

Great advance has been made in the operative procedure of attaining and preserving sterility in the treatment of root canals, and with the clearer conception of what constitutes the ideal root filling considerable improvement in the materials employed has been evolved. The essence of the dead tooth problem lies, however, in its prevention. In this connexion the dental profession has an increasing obligation to train the laity in the principles of prevention in order to achieve the fullest co-operation between patient and dentist. With regular inspection of the teeth and mouth assisted by X-ray examination, tooth cavities may be detected in the early stages and, by timely conservative treatment, progress of the disease arrested before the nerve becomes involved. It should thus be possible to control the major cause of the dead tooth.

An accumulating weight of evidence supports the theory that the cause of dental decay is not simply one of local breakdown, but that aberration of general metabolism plays a most important part. Bacterial activity at the site of the tooth cavity is a *sine qua non* of the disease; nevertheless these bacteria are normal inhabitants of the mouth: a harmful effect from them can be possible only when a relative loss of immunity in the patient exists. The patient's general health, therefore, takes on an increasing significance: good health is incompatible with diseased teeth, and sound teeth with poor health. It cannot be too strongly emphasized that, while conservative treatment of cavities when they exist is absolutely essential, a persistently high susceptibility to dental decay should be regarded as inseparable with the patient's general health, and search for some fault of metabolism is indicated.

The results obtained by the treatment of certain cases of pyorrhoea appear to justify a restrained optimism in the cure of the disease without resort to extraction. As with dental decay, the conception is untenable that pyorrhoea results only from local causes, and, while treatment at the site of the disease is absolutely essential, it is also imperative that any defects in general health must be made good.

The welfare of the hard tissues of the teeth and their contiguous soft structures are intimately linked up with the assimilation of mineral salts, chief among them the compounds of calcium and phosphorus. Present-day habits of life and diet tend to produce an upset in the acid-base balance of the blood, which in turn encourages a depletion of the alkali reserve. In such a condition calcium is utilized to help neutralize the excess of acid carried in the tissue fluids and, thus diverted from its normal function, is ultimately excreted and lost. To make good this wastage, administration of calcium-phosphorus medication is frequently followed by the most beneficial results. Many factors, however, impinge upon the phenomenon of calcium metabolism: even in the presence of adequate supplies of this mineral a state of relative calcium starvation may exist. This apparently anomalous condition may be due either to impaired function of one or more of the ductless glands, to insufficient hydrochloric acid in gastric secretion, or to a vitamin deficiency: for, although the rationale of the endocrines and the vitamins is a controversial matter, both are undoubtedly closely identified with the appropriate assimilation and fixation of the minerals of health.

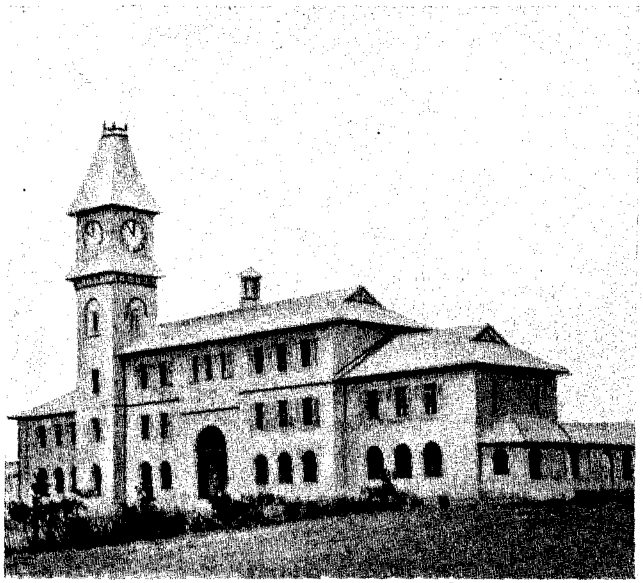
That the development of dental science conduces to a closer co-operation in medicine, surgery, and dentistry is evidenced by the aid the physician seeks of the dentist in the endeavour to eliminate possible foci of infection in the teeth and jaws. The surgeon too demands dental treatment for his cases so that untended oral sepsis may not exist to hinder favourable post-operative progress.

The reflection in the teeth and surrounding structures of the first signs of ill-health suggests indeed that dentistry may well prove to be a magic spear-head in the fight against disease. (T. S. A.)

DEPENDENT PEOPLES, EDUCATION OF. In the British Empire, the development of education in the tropical dependencies during the past 15 years has followed, as far as possible, the seven-point programme laid down by the Secretary of State in 1925, namely: (1) Co-operation in the dependencies between government and other educational agencies by the formation of local advisory committees and by generous grants-in-aid encouraging voluntary bodies to develop their schools side by side with those of the government. (2) Conservation through school activities of the best elements in native life. (3) Insistence upon education having a definitely religious background (whether Christian or non-Christian). (4) Educational programmes directed towards the advancement of the peoples as a whole. (5) Provision of technical and vocational training according to local needs. (6) Education for girls. (7) Development of higher education for the training of native leaders. In this brief review it is proposed to refer only to certain developments in points: (1) Co-operation, (4) Mass education, and (5) Higher education.

In the field of co-operation, not only have advisory committees been established within each dependency, but a central advisory committee has been set up at the Colonial Office in England, including leading educationists, prominent ex-colonial officials, and others. In the past, separate groups of permanent officials at the Colonial Office dealt with the correspondence from separate dependencies, and there was little opportunity for exchange of ideas between one colony and another. To-day, all educational matters, plans, reports, etc., from each colony are referred to the recently formed Advisory Committee, which acts as a clearing house, disseminating comments and suggestions based on the experience of all colonies. In addition, the Committee itself initiates special investigations and suggests new points of policy and practice for the consideration of the territorial directors and their committees, *e.g.* upon the principles of grants-in-aid, upon the contribution of education to the improvement of village life, and so on.

As regards mass education, in most areas little progress has been achieved. In the African dependencies, it appears that there is as yet accommodation for only about five children out of every hundred even in rudimentary schools. Calculations based on achievements in the past 15 years suggest that at present rates of progress the attainment of universal literacy would take many hundreds of years. Among the various factors responsible for this slow progress have been the incidence of the world financial depression before educational work had had time to gather momentum; and the fact that even since the recent recovery treasurers have been nervous of undertaking long term commitments owing to new demands on local treasuries for such needs as defence, etc., etc. Nevertheless, ways and means of developing mass education are again taking their place in directors' programmes, and a recent commission laid new emphasis on the need for immediate plans.


From *The School in the Bush*, Longmans, Green & Co. Ltd.]
ACHIMOTA COLLEGE, WEST AFRICA

In the field of higher education, real progress has been achieved. Not only have the older university centres, such as those at Colombo and Hong Kong, steadily extended their work, but in Malaya, Raffles College has been founded, and provides courses of university standing in medicine and arts; in West Africa, Achimota College has developed an engineering school, and gives a general arts course leading to a London University intermediate examination; in Uganda, Makerere College is to be developed to provide courses of university standing in arts, medicine, and engineering, and in South Africa a similar centre for African students has been opened at Fort Hare. Furthermore, there is a growing conviction at all these centres of higher education that, if they are to take their proper place beside other universities, they must provide not only teaching of a suitable standard but encouragement for research, especially in subjects like tropical medicine and agriculture and studies in native crafts and sociology. (W. B. M.)

DETROIT, in Wayne county, in south-eastern Michigan, and on the Detroit river, the metropolis of the State, and the fourth city in the United States; area 139·6sq.m.; population (1930 census), 1,568,662; (1937 est.) 1,667,000. The foreign-born element of the population numbers 399,281, Poles and Canadians predominating. Assessed value, $2,402,395,880; gross bonded debt $384,525,446; gross city appropriation, $132,147,867; tax levy, $59,280,482; tax rate for city purposes, $24·68. The first of the large cities to go into the depression, Detroit experienced an unusual economic recovery in 1937 due to the renewed buying of automobiles. This recovery was followed, however, by a decided regression in the latter part of the year. During the year slightly under 5 million cars were produced, or 10 per cent. fewer than the peak year of 1929. In spite of technological advances, the industry reported a peak employment of 564,000 workers, or 16 per cent. over the previous high peak. It is estimated that only 464,000 workers were employed in Dec. 1937, due to the recession in business.

Economic improvement was marked by the beginnings of the 'sit-down' strike in the United States, which for a few days reached epidemic proportions in the Detroit area. The Federal Labor Relations Act and Supreme Court affirmation of its legality brought to the surface a long threatening labour unrest. The first 'sit-down' strike occurred in the plants of the General Motors Corporation in Flint in late Dec. 1936. The movement spread rapidly, and during the spring and summer of 1937 practically all automobile and parts manufacturers were subject to 'sit-down' strikes, and entered into union engagements with their employees, the Ford Motor Company being an exception.

DE VALERA, EAMON (1882–), Irish statesman. For details of his career up to 1927, *see Ency. Brit.*, vol. 7, p. 282. From 1932, when he succeeded Mr. Cosgrave, until 1938, he was president of the Executive Council and minister for external affairs of the Irish Free State. Passing through London on Jan. 14, 1937, on his return from Zürich, where he had visited an eye specialist, Mr. de Valera met Mr. Malcolm MacDonald, secretary for the dominions, and informally discussed Anglo-Irish relations. On March 17 he broadcast to Australia on the same subject, and in April issued the text of the proposed new Constitution for 'Eire', which was approved by a majority of the electors at a referendum in July. Speaking in the Dáil on May 19, he reaffirmed the impossibility of resuming the disputed Land Annuity payments to Great Britain, and foreshadowed the possible departure of Ireland from the League of Nations unless that body became more self-reliant and acted more on its own initiative. After the general election, Mr. de Valera was on July 22 re-elected president of the Free State Executive Council, with Labour support, by 82 votes to 52. On the coming into operation of the new Constitution of Eire (*see* IRISH FREE STATE) on Dec. 29, Mr. de Valera automatically became 'Taoiseach' or prime minister, and an *ex officio* member of the Council of State which will aid the president of Eire when the latter is elected.

Wide World]

MR. EAMON DE VALERA

DEWRANCE, SIR JOHN, British engineer; born in London, March 13, 1858; died at Thetford, Oct. 7, 1937. He was educated at Charterhouse and King's College, London. In 1882 he married Isabella Ann, a granddaughter of Richard Trevithick, the inventor. They had a son and a daughter, and his wife died in 1922. Dewrance was chairman of Messrs. Babcock & Wilcox, Ltd., from 1899 till July 1937, and was the head of the engineering firm of Dewrance & Co. During the War he served on the advisory committees of several government departments. He was created a K.B.E. in 1920 and a G.B.E. in 1928. Among the positions which he held were: High Sheriff of Kent, 1925; president of the Engineering and Allied Employers' National Federation, 1920–26; president of the Institution of Mechanical Engineers, 1923; president of the Institute of Metals, 1926–28, governor of the School of Economics, 1920–30. He published *The Corrosion of Marine Boilers* (winning the Watt gold medal); *Machinery Bearings*, etc., etc.

DIABETES. Diabetic mortality advances. Among countries the peak, 22·5 per 100,000, was reached in the United States for 1935; for 1936, it was 27·8 among 187 American cities, 31·2 for the five largest American cities, and 34·9 for New York city. In general, the percentage increase is greatest in those regions where formerly the rate was among the lowest. In Italy, the rate was 4·5 in 1920, but reached 9·5 per 100,000 in 1934, and these figures are almost duplicated in the Canadian Province of Saskatchewan.

The use of protamine zinc insulin has steadily increased since it became generally available in Feb. 1937. In certain clinics for fresh cases of diabetes it has largely displaced regular insulin, and has even been employed along with regular insulin in the treatment of diabetic coma. Its action persists, although in lessening intensity, for more than 48 hours, and herein lies danger, unless food is ingested at sufficiently frequent intervals to replace loss of glycogen. Rather than raise the dose of protamine insulin unduly, frequently it is supplemented with regular insulin, both varieties being injected simultaneously before breakfast.

Hypoglycemic reactions occur with protamine insulin, but they are less frequent, less severe, and somewhat different in type from those with regular insulin. Fatigue, nausea, and headache are common, whereas tremor, sweating, and even hunger do not always appear. The onset of reactions is so gradual as often to escape recognition. Hypoglycemia without obvious signs may reach 0·030 per cent. For those reasons it is sound insurance to insert a small carbohydrate lunch between meals and on retiring; and patients prefer such procedures to multiple injections of regular insulin.

With protamine insulin, the control of diabetes is better than with regular insulin. Protein catalysis and acidosis are lessened, hepatomegaly reduced and gain in weight favoured. The diabetic approaches more closely to a normal individual. Insulin in the production of hypoglycemia for the treatment of schizoprenia has given additional emphasis to the varied mental and nervous phenomena so produced.

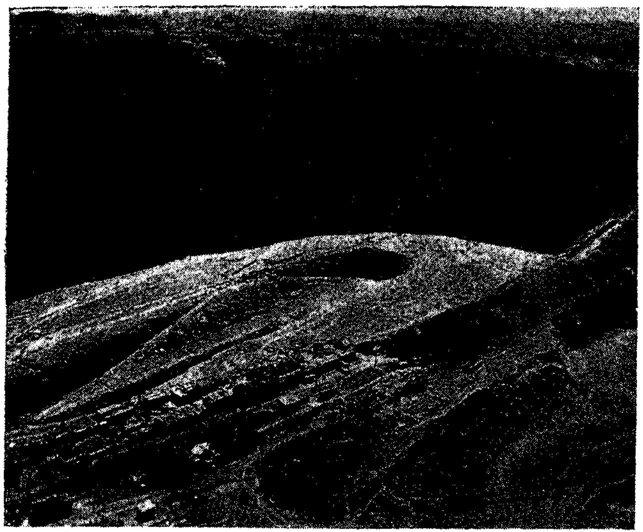
Glycosuria was produced by Houssay, Evans, and others with injections of anterior pituitary extract, but it remained for F. G. Young, a pupil of C. H. Best, working in the Medical Research Council Laboratory under Sir Henry Dale, to cause permanent diabetes in a dog by similar injections but repeated daily for 26 days or less. Dog 28 died of diabetic coma nearly 10 months after the last administration of pituitary extract. Young's work already has been confirmed by Best.

Young is the first to demonstrate the experimental production of diabetes mellitus without direct interference with the pancreas, and this would appear to represent the most notable progress in the study of diabetes since the discovery of insulin. (E. P. Jo.)

DIAMONDS. The diamond industry caters primarily for a luxury demand. It is, moreover, largely dependent on the buying power of the United States, a country in which prosperity and depression alternate with peculiar intensity. It is not surprising, therefore, that sales should have fluctuated greatly in recent years.

The principal sources of supply are South Africa, South-West Africa, the Belgian Congo, Angola, the Gold Coast, and Sierra Leone, production in which countries is handled under a quota system by a central organization known as the Diamond Corporation, through the Diamond Trading Company.

Production in South Africa, which is one of the most important sources of supply of fine gems, was virtually suspended during the later years of the world depression, and was not resumed until March 1936, and then only on a very small scale, deliveries meanwhile being made out of stocks. Production in South Africa was extended in 1937, but still fell considerably short of deliveries. Output in the other countries mentioned, whose customers, particularly in the case of the Congo, include a high proportion of industrial users, was largely increased, particularly in Sierra Leone, where a very rich field has been developed during the past few years.



Keystone]

THE PREMIER DIAMOND MINE, KIMBERLEY, GRIQUALAND WEST, SOUTH AFRICA

Sales of uncut diamonds to the trade by the Diamond Trading Company reached in 1937 the highest level since 1929, having amounted to £9,000,000, compared with £8,500,000 in 1936, £6,235,000 in 1935, and £3,719,000 in 1934. The 1937 expansion, reflecting in part an increase in prices, though stimulated by the coronation celebrations, fell considerably short of expectations owing to the sudden transition from prosperity to depression in the United States, which normally absorbs from 70 to 75 per cent. of the total sales.

It is in the industrial sphere that the diamond industry has made its steadiest if least spectacular progress. Indeed, more than half of the annual sales by weight, though only about 20 per cent. by value, is now used indiscriminately, principally in boring, cutting, grinding, and other abrasive work; for the diamond is immeasurably the hardest and most endurable of known substances, and its uses are being constantly extended and cheapened.

Figures of world production in 1937 are not yet available. The caratage for 1936 amounted to 8,296,900, compared with 7,622,900 in 1935, that for Angola being 580,000, the Belgian Congo 4,800,000, the Gold Coast 1,489,400, Sierra Leone 450,000, South-West Africa 184,900, and the Union of South Africa 623,900. (P. F.)

DIETETICS. An outstanding accomplishment of the year has been the recent synthesis of vitamin B_1 by Williams and Cline. The essential rôle played by this factor in tissue respiration finds further testimony in the discovery of Löhman and Schuster, that the vitamin is an integral part of an enzyme system which is concerned in cell metabolism. That another vitamin of this group is also essential to the function of living cells is seen in the observation of Dietrich and Pendl that the muscular contractions of a heart weakened by perfusion under low oxygen tension were restored to normal by the addition of minute quantities of riboflavin, and also in the discovery of Day and associates that riboflavin will prevent nutritional cataract in rats. Another member of the vitamin B complex, B_6, or vitamin H, has been further identified by Booher as a relatively heat stable factor which is essential for growth and the prevention of an erythredemic dermatosis in rats. The existence of two additional members of this complex was discovered by Elvehjem and associates who described a 'Filtrate Factor' and thermolabile factor called Factor W. Among the ten different sterol derivatives which are known to exhibit the antirachitic properties of vitamin D, Bills and associates report at least two forms in the oils derived from the livers of various species of fish. The most recent addition to the list of vitamins is the antihaemorrhagic vitamin which Almquist has isolated in crystalline form.

Significant in the literature on minerals are the reports of Stearns and Stinger and of Macy and associates that both the iron and the calcium of spinach exist in such firm combinations as to interfere materially with their utilization, and that this food, therefore, is not a particularly good source of these two elements. A hitherto unrecognized rôle played by mineral salts, notably by calcium and potassium, is seen in the discovery of Eppright and associates that the presence of these salts in the intestinal tract is essential in preventing the development of putrefactive organisms.

Of clinical interest is the perfection by Jeans and associates of their photometric technique by means of which they found that 19 to 35 per cent. of the children examined by them were subnormal in respect to vitamin A. Of like interest are the studies of Faulker and Taylor, who demonstrated that the ascorbic acid (vitamin C) levels in the blood of patients suffering from infections were abnormally low. Of significance, too, is the description by Weiss and Wilkins of the cardiovascular disturbances which frequently follow nutritive deficiency, particularly the 'beri-beri heart', and the report by Means and associates of the occasional occurrence of thyrotoxicosis resulting from malnutrition.

Outstanding among the researches in deficiency diseases were the studies on pellagra of Spies and associates, who demonstrated that endemic pellagra, like alcoholic pellagra, responds remarkably well to a high calorie diet containing an abundance of protein with large amounts of yeast, and to liver extract by mouth or parenterally. Likewise, Miller and Barker in their studies on sprue achieved excellent results with diets high in protein (large quantities of raw red beef), and low in carbohydrate and fat. Of everyday interest are the studies of Alvarez upon digestive discomforts which he finds are frequently due to allergy or to other food idiosyncrasy; he emphasizes the diagnostic value of written dietary records and of elimination diets. (*See* also NUTRITION and VITAMINS.). (J. S. McL.)

DIPLOMATIC SERVICE: *see* AMBASSADORS AND MINISTERS TO AND FROM GREAT BRITAIN.

DISASTERS: *see* ACCIDENTS AND DISASTERS.

DISCIPLES OF CHRIST, a religious body of the United States and Canada which received its initial impulse in 1809, dates its separate existence from 1830 and its nationally organized missionary work from 1849. It is congregational in polity. The 1937 convention was held at Columbus, Ohio, with A. W. Fortune as president. F. D. Kershner is president for 1938. A World Convention is held quadrennially (Toronto, Aug. 6–12, 1940). Receipts by all national and State boards for the last fiscal year totalled $2,950,228.80; receipts by churches for local expenses, $9,410,460.56. The membership in the United States and Canada is 1,596,425. The Disciples of Christ participate in the work of the Federal Council of Churches of Christ in America, the present president of which, Edgar De Witt Jones, is a Disciple. The Church was represented at the 1937 conferences at Oxford and Edinburgh, and is taking a part in the steps leading to the organization of a World Council of Churches.

DISTRICT OF COLUMBIA: *see* UNITED STATES OF AMERICA.

DIVORCE. The Matrimonial Causes Act, 1937, timed to come into force on Jan. 1, 1938, is no doubt the most important English statute relating to divorce since the original Act was passed in 1857, permitting divorce for adultery on the petitions of husbands, and for adultery coupled with desertion or cruelty on those of wives. By the Matrimonial Causes Act, 1923, the need for proof of desertion or cruelty in the case of a wife's petition ceased, so that either spouse could thereafter petition alleging adultery only. The new Act adds as causes for divorce, desertion for three years, cruelty, and incurable insanity after five years' continuous care and treatment of the respondent. In this respect the English divorce law is enlarged so as to approximate to the majority of Continental, American, and Dominion models. On the other hand, by a provision which does not appear to have a parallel elsewhere, divorce is forbidden during the first three years of marriage unless the case appears to the Court to be 'one of exceptional hardship suffered by the petitioner or of exceptional depravity on the part of the respondent'. The Court is thus given a discretion as to the exercise of which a practice will no doubt be laid down to bind the judges. The question whether judges who are given judicial discretion should be fettered by precedents is of course controversial, but in the Divorce Court it is answered in the affirmative, *see Wilson* v. *Wilson* 1920, P. 20, and *Apted* v. *Apted & Bliss*, 1930, P. 246.

A provision of great importance indirectly is that in §11 of the Act, adding adultery as a ground for a separation order by a magistrate in favour of a wife. Directly, of course, it is of no special importance, for neither husband nor wife is required by law to live with an adulterous spouse, unless the adultery has been condoned. §6, however, provides that High Court judges may treat a magistrate's order as proof of the facts on which it is based, provided that the petitioner gives his or her evidence in the High Court. This again is a matter of discretion, and very much will depend on its exercise. If the Court interprets its powers broadly, the expense, serious to the large classes who are just above the tests for 'poor persons', of bringing witnesses to the High Court or to Assizes will no longer be a burden. The reproach of 'one law for the rich, and another for the poor' perhaps has been hitherto more true of the English divorce law than of any other in the realm; but if the Act is generously construed, the disability of poverty will be greatly mitigated.

Another point of doubt which the Court itself will have to clear up is whether the Act is retrospective, *i.e.* whether a petitioner can plead acts of cruelty before 1938, or periods of desertion or insanity incomplete unless time has run from some date previous to that year. This is a matter of law, and for safety should go to the Court of Appeal or even to the the House of Lords before any decree absolute is granted in such cases. The Act is clear and definite enough, but judges require more than a simple affirmation before they will declare an Act retrospective, and so possibly disturb vested interests.

Occasionally a petitioner, usually a wife, will obtain a decree nisi, and, herself not desiring to remarry, then deliberately refrain from applying to have it made absolute, either because she wants more money than she thinks the Court will grant her and hopes to make a bargain with her husband accordingly, or to prevent his remarriage. In such case the Act provides that the respondent himself may apply for the decree nisi to be made absolute, and the Court may exercise a discretion in his favour.

Sometimes husband and wife have drifted away from each other, and one may be ignorant whether the other is alive or dead. The old law was that after seven years of ignorance of (but not wilful blindness to) the other's continued existence, remarriage without fear of prosecution for bigamy was possible, but if the absent spouse returned, the second marriage was void. The Act (§8) provides for presumption of death and consequent dissolution of marriage in the case of an absent spouse. The petitioner must adduce 'reasonable grounds' for supposing his or her spouse to be dead, but the burden of proof shifts after seven years of unexplained absence. This provision should be of great value to those classes who cannot afford the heavy expense of tracing a missing person.

Some minor matters may be worth mentioning. §12 relieves clergymen from any necessity either of celebrating a marriage where one party thereto after previous divorce has a former spouse living, or lending their churches for such purpose; and §7, with certain safeguards, affords four new grounds for decrees of nullity of marriage, namely, wilful non-consummation, mental deficiency (or recurrent fits of insanity or epilepsy), communicable venereal disease, or, for a man petitioner, the pregnancy of the woman at the time of the ceremony, unknown to him, by another man. A change of domicile by an English husband, or an alien domiciled in England will moreover, if the cause of the change is desertion on his part, or a deportation order, no longer oust the Court's jurisdiction in divorce. (A. FEL.)

United States.—Only three States made substantial changes in divorce legislation during 1937. Idaho changed the time required for getting a divorce from 90 days to six weeks. Maryland added five years of separation without reasonable expectation of reconciliation to its grounds for divorce. Montana added incurable insanity, under the following conditions: testimony of competent physicians, evidence that the insane person has been regularly confined in a State institution for the insane for five years, the giving of notice of the application for divorce to blood relatives or the guardian and the superintendent of the institution, these persons being entitled to appear and be heard on all the issues. The status of the parties as to support and maintenance of such insane persons is not altered by the granting of the divorce.

There has been a marked trend in the ecclesiastical attitude towards divorce, the churches showing evidence of a feeling of greater responsibility to aid those marrying to achieve success. The feature of the year has been the spread of instruction in preparation for marriage in the churches, in popular magazines, and especially in the colleges. At the general convention of the Episcopal Church, the subject of the re-marriage of divorced persons received more widespread public interest than any other. The proposal to give the bishops wide discretionary power in the matter of such marriages, although overwhelmingly defeated, was aggressively supported by some prominent members of the church.

DOCKS AND HARBOURS. The year 1937 has seen considerable activity in docks and harbours throughout the world, because the improvements in shipping and international trade have justified expenditure which is generally long overdue in the smaller ports, and cheap money has encouraged the larger ones to launch loans. Modernization has been demanded in even the biggest ports, with the greatly increased cost of ships making it necessary to turn them round as quickly as possible to avoid waste of money, while the smallest ones need improvement to accommodate the modern fishing craft, or, in certain countries, to permit the coasting trade to compete with road and rail traffic.

Much additional work has been created by the growing tendency, remarked in most countries, to concentrate trade in a few of the bigger ports. While this is an advantage in many ways, it brings obvious problems in labour, distribution, and safety in war-time : the last has caused particular concern in Britain owing to food supplies. The question of grouping ports all round the British coast under a few big authorities has been raised but strongly opposed. That tendency, however, is increasing in many countries, conspicuously Germany.

The year has been more remarkable for the starting or continuation of new schemes than for any striking technical development in port construction. Improved crane equipment, usually electric, has had to be provided, and the necessity for having air facilities as near to the port as possible has presented many difficulties in planning, especially in the older ports.

New schemes have been started all over the world. Some have been dictated by military or political considerations, *e.g.*, in Japan and her possessions, where an increasing number of areas are being screened from public view, and on the Italian Red Sea coast, where the military demands of Abyssinia are obviously great. Britain is expected to start counter-works shortly.

The scheme to construct a huge new free port at Montier Bay, on the south coast of Newfoundland, has been revived and is being considered. The bay is large, is ice-free and comparatively fog-free, while the port would provide the most direct cargo route between northern Europe and the greatest American trading area, clearing facilities for a huge entrepôt trade, and would be most advantageous for transatlantic air services. Against these factors, the cost would be very high, and Port Churchill has taught caution by showing the difficulties of diverting trade from its normal channels. The principle of free ports is also a matter of argument, both in Canada and the U.S.A., where one is suggested at Boston, Mass.

The possibility of a large volume of shipping being diverted from the Suez route to that round the Cape of Good Hope, either for safety or to save canal dues, was one of the factors which decided the South African government to launch a great improvement scheme at Capetown, where approximately £6 millions are to be spent on improving the docking and dry-docking facilities, reclaiming land for railway connexions, etc. In the meantime, the government is doing all that it can, by better facilities of all kinds and reduced rates, to make the Cape route attractive.

In the western hemisphere a big improvement scheme has been started in Montreal, partly due to the possibilities of Port Churchill in the grain trade of the future. Baltimore is proceeding with the second half of its scheme for the improvement of its approach channels, and many other United States ports have effected great improvements in detail. The Argentine government had published a huge scheme of port improvements at the end of 1936, and, as water is generally their great problem, had planned the building of 23 dredgers ; owing to the increase in shipyard prices, only one of them was actually ordered.

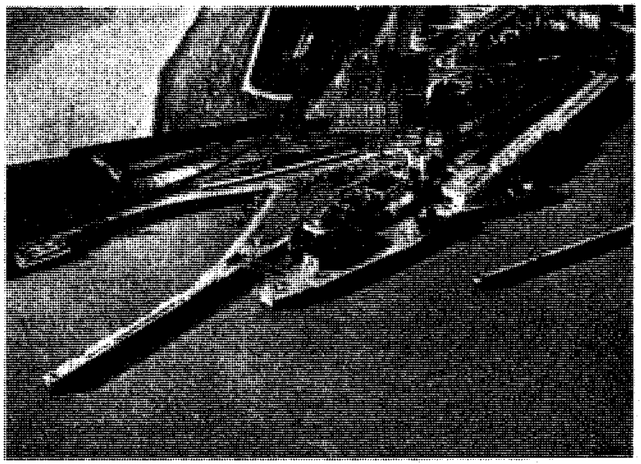
In the Indian ocean, valuable improvements have been effected in Beira, Portuguese East Africa, for the benefit of the growing exports of its hinterland, and a five-year plan has been started for the modernization of Colombo (Ceylon), with special attention to the bunkering of coal and oil, in face of the growing competition of the South African ports.

On the continent of Europe, among the most interesting events during the year have been further steps in the organization and rationalization of German ports, the steady progress of the schemes of the Italian government, particularly conspicuous at Genoa and Naples, and the improvements in the port of Calais, where the safety of shipping and the facilities for handling large quantities of cargo have received equal attention. The Polish government proposes further great improvements at Gdynia, which, a small fishing village only a few years ago, has been developed into a great national seaport in a very short time, but which would be terribly vulnerable in the event of war in the Baltic. In this case, finance is the obstacle.

In the provinces of Great Britain and the Irish Free State, one of the most interesting projects is certainly that of Galway, still aspiring to an important position in transatlantic trade, where the scheme authorized by the Dublin Parliament in 1935 is now being put in hand. The contract for the first part has been accepted and is to be completed by 1939. Transatlantic liners are still to handle their passengers by tender in the bay, but it will be possible at all states of the tide instead of during only six hours. Cargo steamers up to 6,000 tons gross will be accommodated in the dock.

Big dock-extension schemes are under way at Sunderland, with special reference to the coal trade, and on the Clyde the dredging operations demanded by the passage of the new Cunard-White Star liner to the sea—the anxiety about the passage of the *Queen Mary* was a lesson fully appreciated—have been combined with shrewd port developments in Glasgow and its satellite harbours. The abandoned shipyard site at Meadowside has already been bought for harbour extensions.

In Great Britain, however, the greatest interest is in the Port of London, where the Authority has prepared a bill for Parliament permitting further borrowing to the extent of £12 millions for the modernization and improvement of the port. Until the bill becomes law, the details of the developments in mind are not published, but the possibilities of the construction of a fourth dock in the ‘ Royal ’ system, foreshadowed at the end of 1936, ‘ when increased trade demands ’, are widely discussed. This would lie to the north of the Royal Albert Dock, partly over developed land and partly on marshes bought by the old dock company in the ’fifties. The suggestion that the Port of



Aerial Photographic Co.]

THE TRAIN FERRY DOCK AT DOVER. THE FERRY WAS OPENED IN OCTOBER 1936

London Authority should assume the control of the private wharves on the open river-bank has aroused great opposition, largely because it is considered that a great part of the efficiency of the Authority is due to the healthy competition of the private wharves.

In the whole world the two problems which have aroused the greatest attention have been dock labour and safety precautions with oil. Both these questions have aroused great concern. Many concessions have been made to labour, with regard to pay, hours, and decasualization, but the year has seen a large number of strikes. With regard to the handling of oil and spirit, the absence of serious accident for some time is believed by many to have resulted in a false sense of security, and greater precautions are being urged in many ports. (F. C. Bo.)

DODECANESE, THE. An archipelago in the Aegean, lying off the Turkish Asiatic coast and comprising the original 12 islands (Cos, Patmos, Lipso, Kalymnos, Leros, Nisyros, Piscopi, Calpi, Symi, Stampalia, Scarpanto, and Casos) with Rhodes and Castelrosso; taken from Turkey by Italy during the Italo-Turkish War, 1912, Italian ownership being confirmed by the Treaty of Lausanne, 1924.

Land area, 977sq.m.; pop., 134,650; the islands are ruled from Rhodes, the capital (pop. 25,400), by a governor subject to the foreign ministry.

Agriculture (grapes, olives, tobacco, etc.) and sponge-fishing are the principal industries; but the chief value of the islands to-day lies in their strategical position. From Leros, now a strong air-naval base, to Tobruk, Italy's easternmost Libyan base (60m. from the Egyptian frontier) is 390m., and the submarine and air control of this line, especially if combined with similar control of the 270-mile line from Sicily to Tripoli, would give any Power attaining it a stranglehold on all traffic from Gibraltar to the Suez Canal.

DOLE, the colloquial misnomer for the payments made to unemployed persons in Great Britain under the State contributory insurance schemes. From April 1, 1937, the 'waiting period', during which no benefit is paid at the beginning of unemployment, was reduced from six days to three, and an increase was authorized in the number of additional days' benefit that can be drawn after practically continuous employment for five years.

A parliamentary bill that received its second reading in December 1937 provides for the inclusion of outdoor domestic servants (grooms, gamekeepers, chauffeurs, etc.) in the scheme, and for disposal of the surplus of the unemployment fund, which is expected to reach £82 millions by the end of 1938. About 13,500,000 persons are insured under the State scheme, the annual income of which is about £65 millions, and the expenditure about £45 millions.

DOMINICA: *see* Leeward Islands.

DOMINICAN REPUBLIC (Santo Domingo), a West Indian republic occupying the eastern two-thirds of Hispaniola; language, Spanish; capital, Ciudad Trujillo (formerly Santo Domingo); president, Rafael L. Trujillo Molina. The area is 19,325sq.m.; population (1935 census), 1,478,121. It is predominantly mulatto and negro, but whites are politically important. The chief cities are: Ciudad Trujillo, the oldest city in America (50,000), San Pedro de Macoris (20,000), and Santiago de los Caballeros (20,000). Since 1930, the country has been under the dictatorship of President Trujillo. During 1937, the Trujillo policy of material improvements was continued. The principal events were in connexion with the disorders attending the expulsion of Haitians, which aroused considerable feeling between the countries and resulted in a Haitian request for an international investigation. This was opposed by President Trujillo (*see* Haiti). As the year closed, there were rumours of revolutionary activity in anticipation of the presidential elections of 1938. There are over 375m. of railways; the road system has undergone extensive improvement and development. In 1935, imports (largely textiles, foodstuffs, and manufactured articles) aggregated £1,958,010, chiefly from the United States 48·4 per cent.) and Japan (11·8 per cent). Exports (sugar, 61 per cent.; cacao, 13·5 per cent.; coffee, 8 per cent.) totalled £3,097,229, largely to Great Britain (47 per cent.), the United States (26·9 per cent.), and France (12 per cent.). The Dominican Republic is primarily agricultural, with sugar the most important crop, largely for export to Great Britain. It is fourth in world production of cacao. The monetary unit is the peso (about 4*s*.). The national budget in 1936 was £2,100,000, of which 9·4 per cent. was allotted to education. Fiscal control is in the hands of a financial adviser nominated by the president of the United States. In 1936, 947 primary and secondary schools had an enrolment of 104,882, with 13,500 additional students in 585 night schools. (L. W. Be.)

DOUMERGUE, GASTON, French statesman; born at Aigues-Vives, Aug. 1, 1863; died at Aigues-Vives, June 18, 1937. A biography is to be found in the *Ency. Brit.*, vol. 7, p. 557. Doumergue was president of the republic from 1924 till 1931. In Feb. 1934, following the grave disturbances of that month, he responded to President Lebrun's appeal, and became prime minister, returning to his retirement in November of that year.

Vandyk]

M. GASTON DOUMERGUE

DRESS: *see* Fashion and Dress.

DRINKWATER, JOHN, British poet, playwright, and critic; born at Leytonstone, Essex, June 1, 1882; died in London, March 25, 1937. A biographical note is to be found in the *Ency. Brit.*, vol. 7, p. 664. His more recent publications include two autobiographical volumes, *Inheritance*, 1931, and *Discovery*, 1932; *Mid-summer Eve* (play), 1932; *This Troubled World*, 1933; *Summer Harvest*, 1934; *The King's Reign*, 1935. Drinkwater prepared the official programmes for King George V's Silver Jubilee and King George VI's Coronation. In 1924 he married Daisy Kennedy, and he had one daughter.

DROUGHT. Each continent of the earth has within its boundaries one or more regions of such geographic position and topography that they are normally subject to periods of aridity or semi-aridity. In these regions droughts are not unexpected, although they vary in frequency, duration, and intensity. During 1937, at least one such region of each continent, except Europe, experienced some degree of aridity or drought, but throughout the world, droughts were not unusually numerous. Only in the northern great plains region of North America, in east-central China, and in Morocco were droughts abnormally severe.

Keystone]

NORTH DAKOTA. THE RANGE AT GLEN ULLEN, SHOWING PARCHED CATTLE IN THE FOREGROUND

The prairie provinces of Canada suffered most acutely because of subnormal rainfall in the spring and early summer. Soil dried out and began drifting in Alberta and Saskatchewan before the middle of May. Some rain fell in Alberta about June 15, but Saskatchewan did not get relief from the drought until late in July, when general rains occurred. The most serious drought damage was inflicted on the wheat crop, although feed crops and the livestock industry of Alberta, Saskatchewan, and Manitoba suffered generally (*see* CANADA).

In the United States, the 1937 drought was critical but less extensive than in 1934 and 1936. High winds and a shortage of precipitation practically ruined most of the crops in 14 counties of north-eastern Montana and north-western North Dakota. Less critical yet serious drought conditions prevailed in other sections of Montana and North Dakota, and in parts of Wyoming and much of South Dakota. In the southern great plains, rainfall varied from 50 per cent. to 80 per cent. of normal, and drought affected in varying degrees approximately 30 million acres.

Argentina, Brazil, and Ecuador in South America, experienced drought. Aridity in Argentina was not as intense as in 1935, but in combination with depredations by locusts and boll worms, was sufficient to reduce substantially both the cotton and wheat crops. Hardest hit were the areas around Buenos Aires and Cordoba. Several thousand square kilometres in three States of north-eastern Brazil were affected by severe drought early in 1937, while in Ecuador the aridity was reflected in a shortage of wheat at the end of the year.

A relatively hot, dry summer in east-central and south-eastern Europe resulted in some crop reductions in the Danube Basin and the Ukraine, but generally drought was not a serious problem on this continent.

During the first three months of the year parts of China experienced an acute shortage of rainfall. January wheat sowing was curtailed in north-eastern China and in the lower Yangtze valley. By March the drought in Szechuan province was termed the worst in the last quarter century. In south-eastern Honan province, heavy losses of autumn and winter crops were recorded. Throughout the region, peasants were threatened with famine and refugees concentrated in metropolitan areas. Rains in May served to ameliorate conditions, although the early drought resulted in a distressing food problem in Kweichow and Kwangsi provinces.

Prolonged drought created a serious situation in northern Africa, particularly in French Morocco. Customary winter and spring rains failed to come. Seed failed to sprout, some oases dried up, palm and date trees withered, and cattle died, forcing plainsmen to the hills. At one time the government deemed it necessary to ban exports of wheat, barley, and corn. Excessive drought in the north-western Sahara drove many caravans into French Morocco, and in Rhodesia aridity was held responsible for a substantial reduction in the tobacco crop.

Dry weather in Australia during June and July delayed wheat sowing in New South Wales and Victoria. By the end of September, a prolonged lack of moisture had caused deterioration of the wheat crop, although rains early in October brought some relief.

DRUGS AND DRUG TRAFFIC. Laws controlling the production and trade in opium and dangerous drugs vary from country to country. The League of Nations system of conventions aims at a uniform and strict limitation. They are the Hague Convention of 1912, the First Geneva Convention of 1925, and the Bangkok Convention of 1931 on opium smoking; and the Second Convention of 1925 and that of 1931 on manufactured drugs. These are in force; the Bangkok Convention came into force in 1937. A 1936 Convention penalising the trafficker is not yet ratified. The only notable States absent from the treaties are China from the opium-smoking conventions, and the United States and Iran from the 1912 and 1925 treaties. The United States is an active member of the Geneva Opium Advisory Committee.

The 1937 League reports showed decrease of opium smoking in strictly controlled areas. The registered smokers in the Straits Settlements were reduced from 54,232 to 25,625 by the end of 1935; in the same year, the last opium dens were closed in the Malay States. Netherlands Indies reported decrease. China, however, showed retrogression. The drastic laws of 1934–35 produced effects in the provinces under the control of the Chinese government. In 1937, the poppy crops of Yunnan and Szechuan, areas of ' staged ' reduction, were reported to be halved, but the Northern provinces, under Japanese control, increased cultivation for the government monopoly. There were no restrictions, and there was a heavy import of illegal raw opium from Iran (51 tons in 1937) and from Korea.

The League system has succeeded in restricting legal manufacture of derivative drugs to the medical needs of the world. Thus a 1937 report showed production of the main drugs in 1929, as compared with the average of 1931 to 1935 when the treaties were working: morphine fell from 58 tons to 29 on an average, diacetylmorphine (heroin) from 3·6 tons to 674 kg., cocaine from 6·4 tons to 3·9. The former surplus, produced for addiction, was now manufactured clandestinely. Illicit factories were suppressed in Turkey, Bulgaria, and Yugoslavia, but smuggling from the Balkans continued.

Illicit manufacture was mainly centred in the Japanese-controlled parts of China, and in 1937 the province of Hopei was reported to have become the seat of the world's most extensive manufacture of illicit heroin. There was an immense traffic in drugs by Japanese and Koreans. Russell Pasha of Egypt reported 300 heroin dens in Harbin, and some 250,000 addicts, over 1,000 dens in the Japanese concession of Tientsin, and 200 heroin factories; in 1937, fifty of those were moved to Tangshan. Hongkong, by infection, had an opium and heroin problem beyond the resources of the local British government. The international traffic showed the following routes: raw opium—Iran to China, especially Portuguese Macao and the Japanese spheres; morphine, heroin, and narcotics—Japanese China via the Suez to Europe and the United States; and via the Pacific to Canada and Western America.

The Opium Committee began preparation for the conference on limitation of poppy cultivation, to be held in 1940. The world medical need of raw opium is some 1,000 tons a year, and the average annual production from 1929 to 1935 was 1,600 tons excluding China and Afghanistan.

India, Iran, Turkey, the Soviet Union, and Yugoslavia have government monopolies, which are essential to effective reduction; China was organizing control; the gap was Japan. (F. WHI.)

DRUNKENNESS: *see* INTOXICATION.

DUNCAN, Rt. Hon. SIR PATRICK (1870–), G.C.M.G., K.C., British imperial administrator, son of John Duncan, of Fortrie, Banffshire, Scotland, where he was born Dec. 21, 1870. Educated at Edinburgh University and Balliol College, Oxford, he became a barrister-at-law. In 1894 Sir Patrick entered the Civil Service, becoming private secretary to Sir Alfred (afterwards Lord) Milner, at the Board of Inland Revenue in London; and in 1897 accompanied Milner to South Africa on the latter's appointment as governor of the Cape. After the Boer War he was successively treasurer (1901) and colonial secretary (1903–07) of the Transvaal, and for a time in 1906 its acting lieutenant-governor. He was prominent in the formation of the Union, and at once entered the Union Parliament, taking a leading part in its work as a member of the Nationalist Party, and was minister of the interior, health, and education from 1921 to 1924, and of mines from 1933 to 1936. In 1935 he represented South Africa at King George V's Silver Jubilee celebrations in London. In Nov. 1936 he was appointed governor-general of the Union of South Africa, in succession to the Earl of Clarendon, assuming office in March 1937, and receiving the G.C.M.G. On May 11 following Sir Patrick Duncan became a Privy Councillor.

DUST STORMS may or may not represent land damage, according to their source. In inhabited regions, they are likely to be the manifestations of soil erosion by wind on agricultural land. In generally uninhabited regions, such as deserts and scab lands, the dust storms may represent only the aerial redistribution of soil particles from one locality to another, without any particular attendant damage. Wherever they occur, however, dust storms are a symbol of aridity and a corollary of drought, for dry, powdery soil or sand is an absolute prerequisite of a dust storm.

In arid or semi-arid agricultural regions, such storms tend to follow the removal of vegetation which normally protects and ties down the soil. In desert regions and other areas of arid climate and scant vegetation, the storms are virtually seasonal occurrences. In regions of either type, however, they vary with the velocity of the wind and the intensity of drought. Thus, a combination of unprotected dry soil, wind, and prolonged aridity normally may be expected to produce a dust storm.

In the prairie provinces of Canada, for instance, dust storms in the spring of 1937 were among the first visible symbols of concurrent drought and cultivation. At intervals, the storms continued into the summer, and at times attained a velocity of 50 miles per hour.

The northern Great Plains of the United States were subjected in 1937 to some of the worst dust storms in the history of the region. On May 28, visibility in parts of Montana was reduced to less than 50ft. and wind velocity reached gale proportions. From Jan. 1 to Oct. 1 the State experienced local or general dust storms on 68 days. In North Dakota, 399 dust storms occurred in 40 days from February to September inclusive, while 72 days of dust blowing were reported in South Dakota from January to September inclusive. In the southern Great Plains region of the United States, at Goodwell, Okla., 102 dust storms were recorded during the year ending June 30, 1937.

United States Resettlement Association]

ALL THAT REMAINS OF A FARM IN NEBRASKA AFTER DUST STORMS

Yellow-coloured dust storms were again a fairly common occurrence in the drought areas of China, as were the dust and sand storms blowing from the Mongolian desert.

Rains shortly after the middle of January in Australia ended a prolonged drought and stifled the seasonal dust storms. On the continent of Australia, dust storms are characteristically red in colour, and originate for the most part on pasture and range land rather than on cultivated land.

The northern half of the Anglo-Egyptian Sudan, the Sahara, and other arid or desert regions of Africa again experienced severe sand and dust storms, though these were not unexpected, since such storms have become periodic in these regions.

In other parts of the world, less severe and less frequent dust storms were reported, their intensity and frequency varying with the intensity of drought and the degree of agricultural activity. Length of agricultural occupation is almost invariably a determining factor in the potentiality of dust storms in a given drought region.

DUTCH EAST INDIES: *see* NETHERLANDS INDIES.

DUTCH GUIANA: *see* SURINAM.

DUTCH LITERATURE. For Holland, 1937 was *Vondel* year, in which was commemorated the 350th anniversary of the great poet's birth. In Holland and in the Dutch Indies his plays were produced, his poems recited, and his memory appropriately celebrated. Feb. 1937 marked the 50th anniversary of the death of Dekker ('Multatuli'), the nineteenth-century writer, a study of whom has been brought out by Dr. Julius Pée. Holland lost two prominent literary men during the year 1937: Albert Verwey, poet and critic; and Slaverhoff, poet of the sea.

The year saw the publication of about 300 novels, 300 translated novels, 70 volumes of poetry, 50 plays, and more than 200 children's books.

Among the numerous poems, the following may be cited: Bloem's *De Nederlaag*, van Genderen-Stort's *Rym proeven*, Verhoeven's *Maskers*, de Vries' *Nergal*, Engelman's *Het Bezegelde Hart*, Hélène Swarth's *Wijding*, van Duinker's *Hart van Brabant*, Gerhardt's *Laagland*, de Mérode's *Ruischende Bamboe*, van Oosten's *Glorie des Harten*, and Japiks' Frisian poems. There have been anthologies collected by Dirk Cosler (the child in poetry), by de Groot (Christmas poetry), by Gysen (Flemish poems), and by de Molenaar (anthology of world poetry).

Essays and criticism have not appeared except in periodicals, apart from collected essays by Greshoff, entitled *Rebuten*, and Werumeus Bruning's *Ik Zie, Ik Zie, Wat Gij niet ziet*, a delightfully written book about Dutch ancient monuments. Dr. Geyl produced an important historical work entitled *Kernproblemen van onze Geschiedenis*.

In fiction, two historical novels should be mentioned: van Praag's *Minnares in Ongenade* and van Zeggelen's *Een hofdame uit de 18e eeuw*. Bordewijk wrote *Wingerdrant*, Vestdijk *Het Vijfde Zegel*, Fenna de Meyier *Doolhof*, and A. M. de Jong *Het Cose gerucht*. Anne de Vries has a delightful children's book in *Bartje*. Van Randwyk considers unemployment in *Burgers in Nood*, Servaes' *Sonja* centres on prison life, and Schröder's *Studentencocktail* deals with students' life. There are novels about doctors, life in the country, the film-world, life at sea (cf. in this category, Hertog's *De wilde schuit* and de Geus' *De wilde vaart*), and regional life (cf. Coolen's *Kerstmis in de Kempen* and Theun de Vries' *Stiefmœder Aarde*). An interesting point is that there have been no war novels. Louis de Bourbon published *Vrouwen*, a good collection of short stories. The poet Marsman brought out a novel, *De Dood van Angèle Degroux*. Helman's *Aansluiting gemist* deals with the present situation in Spain. Du Perron wrote about Java in *Het Land van Herkomst*.

Periodical literature is vitally alive, but it cannot all flourish, as the reviews number about 1,000; each new movement produces its own periodical.

An important part in the literary life of Holland is played by the very great number of translated works which included, during the year, translations from English, American, French, German, Spanish, Italian, Danish, Swedish, Norwegian, Finnish, Estonian, Icelandic, Polish, Hungarian, Czech, Rumanian, and Turkish. Very many books are also read in foreign languages, but for which fact the number of Dutch books sold would be even larger than it is.

(S. L. En.)

E

EAMES, WILBERFORCE, bibliographer of the New York Public Library: born in Newark, N.J., Oct. 12, 1855; died in New York, Dec. 6, 1937. While still young, he displayed an exceptional interest in books which won the attention of scholars despite his brief scholastic training. Beginning his library work in 1885, he secured a reputation as America's leading bibliographer. His work involved study of many rare tongues, and included innumerable bibliographical studies. Appointed librarian of the New York Public Library in 1892, he became bibliographer in 1916, holding the post until his death.

EARHART, AMELIA (Mrs. George Palmer Putnam), American airwoman; born July 24, 1898; died, together with her navigator, Capt. Fred Noonan, in June 1937 while lost in the Pacific Ocean during a round-the-world flight starting from Miami on June 1. She was the first woman to fly the Atlantic, to fly the Atlantic alone, to fly an autogiro, to cross the United States in an autogiro, to fly non-stop across the United States, and to fly from Hawaii to the United States. In 1931 she married the publisher, George Palmer Putnam.

Wide World Photos]

THE LATE MISS AMELIA EARHART

EARTHQUAKES: *see* SEISMOLOGY.

EASTERN ORTHODOX CHURCHES. In the Near East in 1937, the number of Orthodox Churches was increased to 13 by the establishment of the Church of Albania, which had hitherto formed part of the Oecumenical Patriarchate; its primatial see is Tirana.

The appointment of an Archbishop of Cyprus has not been possible, owing to the deadlock between the government and the Cypriote Church which has existed since the death of the last archbishop in 1933.

The exact position of the Church in Russia cannot be ascertained, but repression by the Soviet régime is reported to be lessened. The Metropolitan Sergei, who has acted as *locum tenens* of the Patriarchal Throne since the death of the last Patriarch in 1925, has been canonically appointed Metropolitan of Moscow. The Russian Church in Exile has lost by death the Metropolitan Antony of Kiev, who was notable as a religious reformer in Russia before the World War; the Metropolitan Anastasy has succeeded him as President of the Council of Russian Bishops.

Under the leadership of the Patriarch Miron, a vigorous evangelistic campaign has been sustained throughout Rumania and especially in Bucharest; similar work, carried on for some years by 'Zoe', a lay and clerical society, has had much success.

In Yugoslavia, the opposition by the Orthodox Church to the Concordat, concluded between the government and the Vatican in 1935, led to a serious political position. On July 23, 1937, the bill ratifying the Concordat was passed by the Skupština; on the 24th, the Orthodox Patriarch Varnava (*q.v.*) died suddenly in Belgrade; and on the 25th, the bishops excommunicated the premier and all ministers and members who had voted for the ratification. In August the Croats, the chief Yugoslavian Catholic group, themselves rejected the Concordat, and two months later the situation was eased by its being indefinitely postponed.

During 1937, delegates approved by all the Orthodox Churches (excluding the Russian Patriarchate) took part in the world conferences at Oxford and Edinburgh. The close relations between the Orthodox and the Anglican Communions has been strengthened, especially by the exchange of students arranged by the Church of England Council on Foreign Relations. It is noteworthy that Anglican students sent to Rumania have been admitted to sacramental communion by the Rumanian Church.

EASTERN STATES. This is an amalgam of a number of small Indian States, which used to be in relation with the governments of Bengal, Bihar, and the Central Provinces. They are now in charge of an agent to the governor-general, with his headquarters at Calcutta. Total area, 65,024sq.m.: population, 8,093,021. The most important of the group are Cooch Behar (ruler, Maharaja Jagaddipendra Narayan, with a salute of 13 guns), Tripura (Maharaja Sir Manikya Bir Bikram Keshore: 13 guns), and Mayurbhanj (Maharaja Sir Pratab Chandra: 9 guns). The inhabitants in most of the States are largely aboriginal tribes.

EAST PRUSSIA, a province of Prussia and the German Reich lying S. of the Baltic between the Vistula and Niemen rivers. Area, 14,283sq.m. Population (1933), 2,333,301; density, 163 per sq.m. By the Treaty of Versailles in 1919, East Prussia was cut off from the rest of Germany by the intervening so-called Polish Corridor. This has caused much friction between Germany and Poland; the Germans complain that the Polish railways do not furnish adequate and satisfactory transit facilities across the Corridor; the Poles have complained at times that they have not been properly paid for hauling German trains. To improve communications, Germany has placed excellent new steamers in service between Stettin, Danzig, and the East Prussian capital of Königsberg. Here in Königsberg is held an annual eastern fair, at which some foreign nations exhibit; it also serves as an economic link between East Prussia and Germany, and a good opportunity for displaying the products of the German four-year plan.

East Prussia is a region of great landed estates, owned and operated by the landed aristocracy known as Junkers. It was a constant demand of the Socialist and Catholic Parties after the War that these estates should be broken up into small farms for the German unemployed. President von Hindenburg, himself the owner of a large East Prussian estate, steadily refused to approve this agrarian reform, and thereby contributed to the downfall of the Brüning, Papen, and Schleicher cabinets. This reform was part also of

Hitler's programme, but the Nazis have done little to carry it out. The Nazi district leader of East Prussia, Erich Koch, hopes to establish industries in East Prussia, and so bring about a more healthy balance between agriculture and industry. (S. B. F.)

ECLIPSES : *see* ASTRONOMY.

ECUADOR, a South American republic situated astride the equator on the Pacific ; capital, Quito ; provisional president, Alberto Enríquez. The area, including the Galapagos islands (2,400sq.m.), is 337,392sq.m., according to Ecuadorian claims, but approximately 100,000sq.m. is disputed with Peru (*see* PERU). The population was officially estimated at 2,554,744 in 1932, but more reliable later estimates give 3,414,106 in 1935. The chief cities and estimated populations in 1932 are : Quito, 140,000 ; Guayaquil, 120,000 ; Cuenca, 420,000 ; Riobamba, 21,200. The official language is Spanish.

History.—Under the government of a junta headed by Federico Páez, which came into power in 1935, Ecuador has attempted an extensive programme of reforms. The budget for 1937 was the largest for many years, with heavy outlays for national defence, public education, and public works and communication. Special efforts were made to advertise the country and to attract tourists. On Aug. 10, a constituent assembly met to consider needed reforms of the Constitution of 1906. This assembly formally named Páez provisional president of the country, and began consideration of constitutional changes. Meanwhile, the government sternly repressed adverse criticism, closing newspapers and refusing to permit exiles to return to the country. As internal unrest continued, President Páez was compelled to resign (Oct. 24) and was succeeded by the war minister, Alberto Enríquez. President Enríquez promptly dissolved the constituent assembly, and announced a formal investigation of governmental affairs and the purge of those who had ' abused power '. The principal feature of Ecuadorian foreign relations in 1937 was the attempt under the auspices of the United States to adjust the century-old boundary dispute with Peru (*see* PERU).

Trade and Communication.—Ecuador has external communication by sea (almost entirely through Guayaquil) and north and south by air. In 1937, preparations were made for the opening of air services to all sections of the country. Ecuador has about 600m. of railroad. In September, contracts were let for an eight-year programme of highway development, under which 15 trunk highways are to be built. Imports in 1935 totalled 97,094,000 sucres in value, exports, 113,498,000 ; in the first 10 months of 1936, they were, respectively, 114,792,006 sucres and 87,650,016 sucres. The leading items of import are textiles, machinery, electric machinery and implements, motor vehicles and accessories ; the leading exports are : cacao, ores and gold dust, crude oil, and coffee. The United States leads in exporting to Ecuador, supplying 28·9 per cent. in 1935 (with Japan 17·6 per cent., Germany 14·1 per cent., and Great Britain 12·2 per cent. next in order) and in imports, taking 46·6 per cent. United States trade with Ecuador for 1936–37 showed a 16 per cent. increase. Negotiations for tariff reciprocity with the United States were begun in 1937.

Finance and Banking.—The monetary unit is the sucre, whose international exchange value had sharply declined by the close of 1937. The budget for 1937 calculated expenditures and revenues at 79,500,000 sucres.

Education.—In 1935, Ecuador had 2,239 elementary schools, 21 secondary schools, and four universities, with elementary and secondary enrolments of 181,638 and 5,589. For 1937, the budget allotment for education was higher than ever before. The Army has approximately 6,000 men, the Navy 500 men. (L. W. BE.)

EDEN, (ROBERT) ANTHONY (1897–), British Secretary of State for Foreign Affairs, second son of Sir Wm. Eden, Bt., was educated at Eton and Christ Church, Oxford. After service in the World War (1915–19), he contested the Spennymoor Division in 1922, and in the following year was elected for Warwick and Leamington, which he has since continued to represent. From being parliamentary private secretary to Sir Austen Chamberlain (1926–29), he became under-secretary for Foreign Affairs, and in 1934 was made Lord Privy Seal and a Privy Councillor. In June 1935, he entered the Cabinet as Minister for League of Nations Affairs, holding this post until the following December, when he succeeded Sir Samuel Hoare at the Foreign Office. In Jan. 1937 he concluded the ' gentlemen's agreement ' with Count Ciano, the Italian Foreign Minister, concerning the situation in the Mediterranean. At Geneva, in May, he welcomed Egypt into the League of Nations, and in the same month sat with representatives of the Dominions, who came to London for the Imperial Conference. At Geneva again in September, he delivered an important pronouncement on Palestine, and took part in a world-wide broadcast by leading European and American statesmen on world economic co-operation organized by the American National Peace Conference. Later in the month Mr. Eden represented his country at the Nyon Conference (*q.v.*), convened by Great Britain and France to discuss the attacks (arising out of the Spanish Civil War) on merchant shipping in the Mediterranean, and in October added to his reputation by a speech in Parliament covering the field of foreign politics. In the same month and on the same subject he addressed at Llandudno one of the largest audiences ever assembled in Wales. In November Mr. Eden represented Great Britain at the Nine-Powers Conference (*q.v.*) on the Japanese attack upon China. At the end of the same month, together with Mr. Chamberlain, he met in London and came to a cordial agreement with MM. Delbos and Chautemps on the situation in Spain, Germany's demand for colonies, and other matters. In December Mr. Eden protested strongly to the Japanese Foreign Minister against attacks on British warships and merchant shipping. On Feb. 20, 1938, opposing the intended opening of conversations with Italy, he resigned.

Elliott & Fry, Ltd.]

MR. ANTHONY EDEN, WHO RESIGNED FEB. 20, 1938

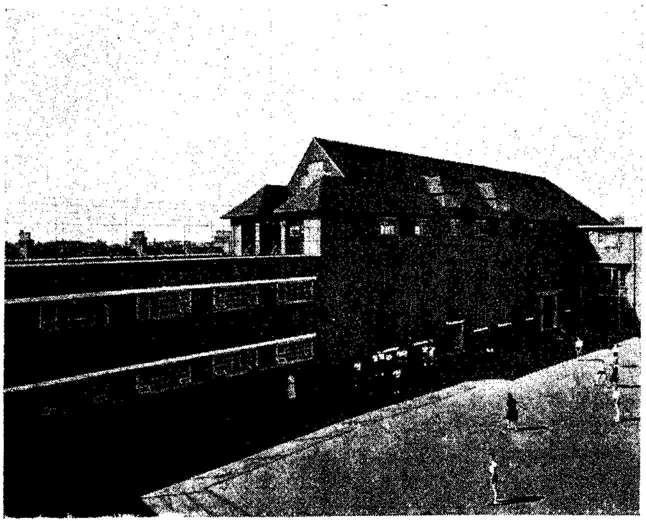
EDINBURGH, capital of, and second largest city in, Scotland ; population : (1931) 438,998, (estimated 1936) 464,600 ; famous for the charm of its situation, the beauty of its buildings, and its main thoroughfare, Princes Street, and the quaintness of its old courts and ' wynds ' ; seat of a university, the Scottish National Library, Gallery, and Museum, a world-famous medical school, and Holyroodhouse, once the palace of the Scottish kings and still a British royal residence.

The history of Edinburgh in 1937 centres mainly on two royal visits—the former by the Duke and Duchess of Gloucester on April 28, when the Duke laid the foundation-stone of the new government buildings on Calton Hill, which on their completion in 1939 will serve as a ' Scottish Whitehall ', housing the more important Scottish administrative departments. On the same occasion the freedom of the City was conferred on the Duchess, and colours were presented by the Duke to the 1st Battalion Gordon Highlanders. On July 5, the King and Queen arrived at Holyroodhouse for a State visit lasting until the 11th ; on the day of their arrival they reviewed the King's Scottish Bodyguard, the Royal Company of Archers. On the 6th, a Court was held, and a State drive through Leith took place, Their Majesties being hailed by the local fisher-girls in their traditional dress. On the following day the Queen was installed, in St. Giles's Cathedral, as Lady of the Order of the Thistle ; a royal visit to Edinburgh Castle included the traditional ceremony of offering the keys ; and a garden party was held at Holyroodhouse. On July 8, after a levée, the Queen received the honorary degree of Doctor of Laws of Edinburgh University. During the year Sir Alexander Grant (*d.* May 21, 1937) gave a full service of silver, glass, and linen for use on the occasion of royal visits to Holyrood.

EDUCATION. Under this head is included a general survey of education in the principal English-speaking countries of the world, to which is added a section on education in British India. For more complete details of education in Great Britain and Northern Ireland, *see* ELEMENTARY EDUCATION ; SECONDARY EDUCATION ; EDUCATION : MORAL AND RELIGIOUS, etc.

British Empire.—Besides being a federation of countries for utilitarian purposes, the British Commonwealth of Nations has its basis in the unity of descent and of cultural and historical traditions. In education the same traditions which moulded the systems of England and Scotland were at work in all the English-speaking Dominions. The interplay of religious and secularist factors, the rivalry between voluntary effort and State intervention ran on similar lines, but the difference in territorial distribution, the relative importance of catholic, anglican, or puritan influences, and the presence of the problem of bilingualism tended to differentiate the systems. Gradually the Dominions have developed their own traditions more in keeping with their needs. At first sight there may seem little in common between the centralized and secular system of Australia and the decentralized and partly denominational system of Canada ; or between catholic Quebec and calvinist South Africa. Yet the basic principles of their educational systems are similar. The belief in the democratic principle of equality of educational opportunities and in tolerance towards political and religious dissenters is common to all. After the War, this community of ideas became more consciously recognized. The appearance of new post-war political philosophies challenged the democratic traditions of the British Commonwealth and led its members to revise their educational systems and to plan them more systematically, so that a common British philosophy of education is gradually emerging through the mutual influence of Great Britain and the Dominions.

To bring out this community of purpose, a mutual recognition is enough. Lately the collaboration of the members of the Commonwealth in educational reform has become more pronounced. The Hadow Report of 1926 has influenced the Dominions, and new democratic societies overseas have changed the attitude of England. The development of the London Day Training College into the Institute of Education as the educational clearing house of the Commonwealth, and the collaboration of the Dominions in the *Year Book of Education* started by Lord Eustace Percy in 1932 are visible signs of this new tendency.


London County Council]

A MODERN SENIOR ELEMENTARY SCHOOL IN THE COUNTY OF LONDON

During recent years all the members of the Commonwealth were more active in the revision of their programmes and reorganization of their school systems. There is a common tendency to rebuild the systems on horizontal lines with three stages : primary, intermediate, and secondary, which would roughly correspond to the psychological stages of growth. The traditional conception of secondary education as a preparatory step to academic professions gives way to a more comprehensive view, which includes technical and vocational education as well. Indeed, the division into general and technical education is considered to be obsolete, and the new programmes try to bridge the traditional gulf.

For administration and finance extreme decentralization and one-teacher schools are being superseded by the organization of rural districts into larger units and consolidation of small schools. Methods are also reformed, and the ideas of the ' active school ' and individual approach are gaining ground.

Canada.—In Alberta, the most important features of the past two years have been : (*a*) the introduction of the new enterprise or activity system of education in the elementary schools, (*b*) the beginning of an ' intermediate school ' organization, and (*c*) the reorganization of the administrative rural units into larger groups of schools called ' divisions '. More than 800 one-school districts have been consolidated.

In British Columbia the first experiment in merging rural districts was started in 1935 in Peace River territory ; 66 districts were combined, and the results completely justified the measure. In 1936, domestic science and manual work were made compulsory subjects. The revision of curricula has been proceeding for the last two years, and the new programmes for I–VI grades are planned to direct the attention of teachers to the individual child.

In Manitoba, a consultative committee was established in 1936 to consider the general introduction of manual work and other practical subjects.

In New Brunswick, the first minister of education was appointed in 1936. Since 1932, the problem of consolidating the rural districts has been in the forefront. The superintendent in his last report (1937) recommends a less rigid and more elastic course of study, with fewer compulsory and more elective subjects. In his opinion the differentiation between academic and vocational education should be abandoned and the two sides should be coordinated. He also recommends the introduction of an intermediate stage according to the 6–3–3 plan. A commission for the revision of programmes was appointed in 1936.

In Nova Scotia, the new programmes for the junior high school were introduced in 1935. New programmes for the senior high school are also being gradually adopted. New subjects, including music, art, manual work, commerce, and industry have been admitted as valid for the Provincial High School Certificate.

In Ontario, the Teacher's Association, in its report in 1936, said: 'Two defects in particular hamper at every turn the progressive development of the school system: these are the unsatisfactory system of local units of administration and an obsolete system of provincial grants.' Certain measures for the closure of redundant rural schools taken in 1936 are only a beginning and must lead to a more comprehensive legislation. Commissions were appointed in 1936 for the revision of programmes in accordance with the general trends.

In Catholic and French-speaking Quebec, the new tendency is manifested in the revision of curricula since 1935. The new programmes are adapted to local needs with an agricultural or industrial bias respectively. Twenty agricultural secondary schools were founded during the last few years.

Australia.—In New South Wales, legislation is being prepared for the reform of technical and general post-primary education. A central advisory committee was formed in 1935 for the guidance of pupils into suitable branches of employment. In 1936, a new type of intermediate school—the activity school—was opened, intended for pupils of non-academic abilities. The Australian Council for Educational Research, founded in 1929, arranged an international conference in 1937 under the auspices of the New Education Fellowship. In May 1937, the meeting of Australian ministers and directors of education passed a resolution in favour of raising the school age to 15 years to operate from 1940.

In Victoria, the new programmes have been in force for the past two years. Provision was made in 1936 for instruction in woodwork and cookery in all high schools.

In Queensland, revision of programmes was started in 1935. Activity methods were introduced by organizing various projects. In 1936, 439 schools participated in the new movement. Especially popular is the forestry project with forestry plots, and in 1936, 58 schools planted 11,000 trees. The director of education in his last report (1937) stresses the necessity of individual approach and activity methods.

In South Australia, the first Commonwealth conference on technical education was held in 1936. As a result the Australian Council of Education was established and the Advisory Standing Committee on Technical Education constituted. It was recognized that the cultural aspect of technical education must be as carefully guarded as the utilitarian. The intermediate stage was lately made a general feature of the system. New programmes were issued in 1936.

In Western Australia the consolidation of rural schools led to 24 districts having been centralized. The new curriculum introduced in 1936 gave way to larger grouping of subjects and, to quote the report, 'to the fusion and integration of valuable content into units of human experience. . . . There is throughout the curriculum much less of definite prescription and more of suggestion, to enable teachers of ability and initiative to make intelligent adaptation to individual pupils, community needs and interests. . . . A broader concept of the curriculum has emerged. The daily experience of the child is the curriculum, and the course of study is merely a printed guide for the teacher to aid him intelligently in promoting child growth and development'. School gardens and junior farmers' clubs are encouraged. An intermediate course of two years is offered to children in rural areas and the junior high school course of three years is available in all urban centres.

In Tasmania, new intermediate rural schools, known as 'area' schools, offer a course with an agricultural bias.

New Zealand.—During the years of depression, the lower limit of school age was raised to six years. One of the measures of the new government in 1936 was the readmission of five-year-olds to public schools. The proficiency examination has been discontinued since 1936, and its restrictive influence was thus removed, giving teachers more opportunity to plan courses more suitable to individual requirements of pupils. The Research Council of Education has been asked to prepare a report on the intermediate school system. The government has decided to raise the school age to 15 years.

The Union of South Africa.—In Cape Province, a conference on rural education was held in 1934. As a result, the superintendent of education is endeavouring to provide a more differentiated curriculum for post-primary pupils and to introduce an intermediate stage. The division of post-primary education into 'general' under the Provincial department and 'vocational' under the Union department will have to disappear, and both departments will have to co-ordinate their efforts in order to reach more pupils and to adapt curricula to their needs. Courses in agriculture and domestic science were started for that purpose.

In Transvaal, a commission was appointed in 1936 to investigate the system of the province. The conference at Pretoria in 1936 approved the principle of centralization of rural schools and in 1937 the schemes were in operation in 12 areas. In each a central school with hostels is to be established. Special school farms were opened by the department. Complete freedom has been given to principals of these schools to depart from the stereotyped syllabuses according to local circumstances. Both cultural and agricultural sides are equally well guarded. New methods in art subjects were much furthered by the visiting lecturer from Toronto, Mr. Arthur Lismer.

In the Orange Free State, the raising of the limit of compulsory attendance to 16 years was recommended by the director in 1937. Centralization of rural schools is continued, and in 1936, 34 schemes were in operation.

Ireland (Eire).—The gradual introduction of Irish as the medium of instruction is continuing, and at present more than half the secondary schools and almost all primary schools use Irish. Apart from this change, important reforms indicate the general reconstruction of the school system. Small rural schools are being eliminated through amalgamation, the curriculum of secondary schools is losing its previous rigidity with the introduction of new selective subjects, and the system of vocational education is growing rapidly, through the co-operation of the ministry, local authorities, and industry and agriculture. In primary schools the introduction of rural science as an optional subject is also a sign of the general tendency.

British India.—The most important problems of education in India are the wastage and stagnation in primary schools and the overcrowding of secondary and higher education. As the last *Report on Education in India* (1936) points out, only 26 per cent. of boys attending primary schools attain literacy, and 'it is obvious that the administration of primary education by local bodies has entirely failed'. The government of the United Provinces, in a resolution on the reorganization of secondary education, states that 'the value of university education is impaired by the presence of a large number of students who are unfit for higher education . . . and that the only feasible remedy is to direct them to practical pursuits in the pre-university stage'. Two British experts (A. Abbott and S. H. Wood) visited India at the invitation of the government, and published a report in 1937; among their suggestions were the following: (*a*) infant classes should be entrusted to trained women teachers, (*b*) the education in primary schools should be based more upon the natural interests and activities of young children, (*c*) the curriculum of the rural middle schools should be closely related to the children's environment, (*d*) the vernacular languages should be the medium of instruction throughout the secondary stage, (*e*) manual work should be part of the curriculum of every school. In administration, the recovery by governments of some of the powers relinquished to local bodies and greater austerity of discipline are advocated. The necessity of these reforms is generally recognized, and in Punjab rural science has been introduced in vernacular middle schools. Some schools have taken up petty crafts and industries, floriculture and tree-planting. With the exception of Punjab and United Provinces the middle schools of India are as a rule English-speaking. The introduction of compulsory attendance is proceeding slowly, and in Madras 71 per cent. boys and 28 per cent. girls of school age (6–11) attend schools. For British India as a whole, the percentages are only 50 and 17 respectively.

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United States.—Significant developments in education in the United States in 1937 include the rapid rise of enrolments in secondary schools; increase in enrolments in the colleges and universities; substantial increases in State appropriations for education and in Federal appropriations for the Land Grant colleges and for vocational education; the large number of school and college buildings erected through aid from the Public Works Administration of the Federal Government; and the promotion of adult education, through the Works Progress Administration of the Federal Government, including a variety of courses in art, music, the drama, and other subjects. Other developments that should be noted are the persisting decrease in enrolments in elementary schools in proportion to the general population of the United States; the continued use of the radio in adult education; the extension of radio educational broadcasts; and the advancement of standards in the pre-service preparation of teachers. Several States during the past year began to require for teachers a minimum of four years beyond high-school graduation. About a dozen of the States and the District of Columbia have established such standards for licences to teach in both elementary and secondary schools. The 'Forum Movement' gained considerable headway during the year, in large part through the energetic leadership of Dr. John W. Studebaker, the United States commissioner of education. Almost numberless books and much periodical literature appeared on various educational subjects during the year.

The Educational Policies Commission.—The work of the Educational Policies Commission was significant. This commission, created in 1936, and composed of more than a score of distinguished American educators, appointed by the National Education Association and the Department of Superintendence (now the American Association of School Administrators), seeks to take a comprehensive view of American life to determine the essential responsibilities of education, and to state how these responsibilities can best be met. The commission has been engaged in research, and has published important documents, among which are *The Unique Function of Education in American Democracy*, prepared in collaboration with Dr. Charles A. Beard, and *Research Memorandum on Education in the Depression*, prepared by Dr. J. B. Sears. Other important publications are soon to appear. It is the belief of the commission that its work will be effective in proportion to the degree to which the educational profession in the United States is brought into the task of formulating pronouncements and securing their practical acceptance. Assisting the commission as consultants *ex-officio* are 2,200 officials of educational and regional organizations, who con-

NUMBER OF PUPILS IN 1935–36

	Population 5–20 years in 000.	No. of pupils in primary schools.	No. of pupils in secondary schools.	No. of pupils in vocational schools.	No. of pupils in private schools.	No. of students in universities and colleges.	Per cent. of all pupils to population 5–20 years in 000.
CANADA	3,250	1,816,094	301,659	included in secondary	100,200	93,234	71
AUSTRALIA . . .	1,866	880,871	137,842	,,	243,196	10,594	68
NEW ZEALAND . .	399	208,815	20,215	18,156	33,387	4,967	71
SOUTH AFRICA (EUROPEANS)	584	320,956	48,283	24,424	23,737	7,892	73
IRELAND (EIRE) . .	860	489,007	35,111	64,243	no inf.	5,594	69
BRITISH INDIA . .	97,740	11,065,007	1,388,141	257,276	686,109	111,808	14
ENGLAND . . .	9,504	5,308,271	463,906	1,106,551	300,000	93,716	76
SCOTLAND . . .	1,213	603,761	148,577	160,944	10,000	18,697	78
N. IRELAND . . .	344	200,607	10,866	25,194	3,000	1,580	70

stitute an effective co-ordination between the profession and the public.

During the year, the non-professional graduate schools of Harvard, Yale, Princeton, and Columbia began a cooperative experiment in examinations for the purpose of gaining an estimate of the academic achievements of entering graduate students in the more important fields of learning. This experimental step was not designed to affect the membership of students in these graduate schools, but to determine the value of carefully prepared questions (of the short-answer or objective type) as aids to the students and to their advisers and teachers in regard to the aptitude and the preparation of the students for graduate work in the non-professional schools. The examinations were the same in all the four institutions, except for options in language. The experiment is regarded by some observers as an important development in higher education.

Important during the year was the experiment of the Progressive Education Association through its commission on the relation of school and college. This commission, composed of school and college representatives concerned with the problem of this relation, was formed seven years ago to study changes which seemed to be most needed and to develop co-operation in an effort to make the work of both the schools and the colleges more meaningful to the students in each. In 1937, the work of the commission was developing in at least five general directions: greater continuity in the curricula; better integration of the subject-matter; more satisfactory adaptation of the work of the schools to individual capacities, needs, and interests; more vital subject-matter; and more extensive use of the communities in which the schools are located.

Secondary Education.—Also important was the cooperative study of secondary school standards which is directed through representatives of the six regional associations of secondary schools and colleges in the United States. The purpose of this study, which made considerable progress in 1937, is to make more vital and less mechanical accreditation procedures, to make them more stimulating, more adaptable to the individual differences of students, and more broadly comprehensive and less narrowly academic. Much experimentation was made in an effort to apply and validate criteria and procedures in many representative secondary schools in all parts of the country. In process now is the work of analysis and evaluation of the results of experimental materials, to be followed by a report containing recommendations for programmes of the various regional associations.

Interest in the problems of secondary education in the United States was especially revealed in 1937 in the wide discussion of the report of the committee on orientation of the department of secondary school principals of the National Education Association, entitled 'Issues in Secondary Education', which was issued in 1936. This report is considered a significant contribution to educational philosophy and highly important in the development of secondary education. The report grew out of the beliefs (1) that the full realization of democracy in the United States required greater effectiveness in secondary education; and (2) that this effectiveness should be made through a programme of secondary education more closely related to the realities and problems of modern American life.

Proposed Federal Aid.—An interesting development in education during the year was the increased and increasing interest in Federal aid for general education in the various States. This proposal, which has been widely discussed for many years, at present appears in what is known as the Harrison-Black-Fletcher Bill, now before Congress. It provides for an initial appropriation of $100 millions and an annual increase in the sum of $50 millions until the appropriation reaches $300 millions in the fifth year, that appropriation to continue annually thereafter. The money is to be used by the States for the promotion of a programme of public education, the manner in which it is to be used to be left to the various State legislatures. Control or supervision of State schools or State school systems by the national government is expressly prohibited in the Bill. Under its provisions a State, in order to participate in the Federal allotments, must maintain its school system for at least 160 days during each year, except when suspended because of epidemics, fires, or 'acts of God'; and it must spend annually from public revenues, State or local or both, as much per child between the ages of five and twenty years as was spent in 1934. The Bill provides that the distribution of the annual allotment for each State is to be in proportion to the population between those ages, based on the census reports, and without discrimination.

In June of 1936, President Roosevelt appointed an Advisory Committee of 18 people to study the subject of Federal aid to vocational education. This committee was enlarged to 23 in June of 1937, and instructed to study the broader questions of Federal relationships to all kinds of education in the United States, the report to be made before the end of the year.

Horace Mann Day.—Of wide interest in the United States this year was the celebration of the 100th anniversary of the establishment of the Secretaryship of the Massachusetts Board of Education. This centennial served to draw fresh attention to the work and influence of Horace Mann, who is regarded as the father of public education in the United States. The period from Nov. 7 to 13, designated as 'American Education Week', witnessed the climax of this observance, with Nov. 9 as 'Horace Mann Day'.

A radical departure in higher education appeared in an experiment announced in 1937 at St. John's college, Annapolis, Maryland. The new programme of study at that institution is not a college 'course', as that word is ordinarily used in the United States. Nor is it a group or number of courses, either required or elective. An entering student may take either the old or the new programme, which is a complete and integrated curriculum that extends over four years. Once selected, however, the student will be required to take the new programme in its entirety. Comprehensive and general, this is designed to afford ample opportunity for the individual interests and capacities of the students and to lead to the degree of Bachelor of Arts. The programme, opened to freshmen who entered the institution in the autumn of 1937, is based on a hundred or more 'great' books of the intellectual tradition of the Western world. Columbia college, in New York City, announced during the year a general course in the humanities to be required of students in that institution. Apparently the tendency generally in the United States is towards more general rather than specialized education, in higher institutions. Interest continued also during the year in the reconstruction of the curricula in elementary and secondary schools.

The Southern Association of colleges and secondary schools created a Commission on Curricular Problems and Research to plan and direct a study of the secondary schools and colleges that are members of the Association. The study, in part similar to that of the Progressive Education

Association and other regional organizations, is designed to develop an educational programme that will more adequately meet the needs of adolescent youth in the southern section of the United States. This experiment was approved as an enterprise of the Association in 1937, and will probably continue for five years or longer. Under the experiment, secondary schools and colleges will be encouraged to modify their present instructional programmes so as to provide for desirable outcomes that are not now being achieved.

Public pronouncements by President Robert M. Hutchins, of the University of Chicago, during the past few years, particularly *The Higher Learning in America*, which appeared in 1936, led during 1937 to wide discussion of conditions in higher education and drew lively attention to the growing movement to reorganize undergraduate materials and methods of instruction.

A significant development in education in the United States during the past year has been the work of the American Youth Commission of the American Council on Education. This commission gave much attention to the problem of the vocational adjustment of youth and the responsibility of school and the public employment agencies and employers of labour. In October it approved a plan of experimentation between the schools and the U.S. Employment Service.

BIBLIOGRAPHY.—*Journal* of the National Education Association of the United States for 1937 (monthly except June, July, and August). Publications of the Office of Education, United States Department of the Interior.

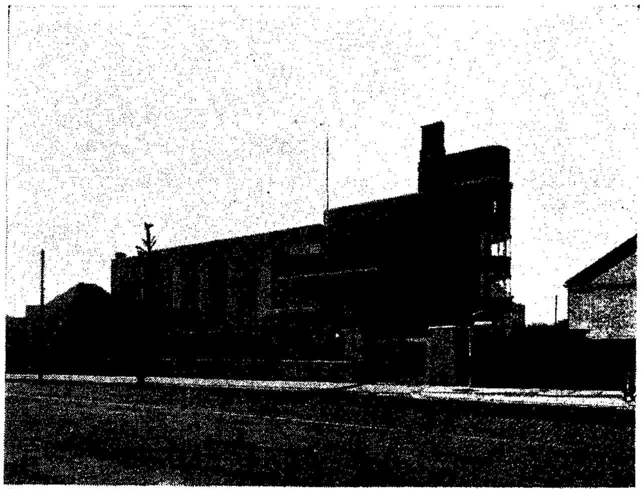
EDUCATION ADMINISTRATION IN GREAT BRITAIN. During the Coronation celebrations, the King laid emphasis upon the importance of 'doing things together for the common good'. Co-operation has been the key-note of the educational year, and the technique of consultation involving much preparatory work has tended to increase the burden of educational administration. An early example of collective action is the Burnham Committee, set up after the War to deal with teachers' salaries in England and Wales. Under the chairmanship of Lord Onslow, it has during 1937, in a way that gave general satisfaction, dealt with the up-grading and down-grading of Elementary Schools for the assessment of Head Teachers' salaries. This problem derived its complexity from the constant changes in school population as a result of slum clearance, housing development, industrial transference, and the outward drift from congested areas. School population continues to decline, and there are many conflicting estimates as to its future trend. A tantalizing feature of this redistribution and decline of school population has been its tendency to leave behind a sufficiency of children to necessitate the retention of the partially denuded schools in the formerly congested zones. This migratory process continues to require the closest collaboration between the education authorities and the authorities responsible for housing and town planning.

There has been much consultation with a view to implementing the clauses of the Education Act, 1936, which enable local authorities to make building grants up to 75 per cent. of the cost of the erection of voluntary senior schools; and between contiguous local authorities concerning the application of the clauses permitting exemptions when the school-leaving age is raised to 15 on Sept. 1, 1939. The elaborate character of memoranda issued by the Board of Education and the Association of Education Committees for the assistance of authorities reveals the Act's administrative complexity. Another feature of the year has been the development of regional councils for technical education in various parts of the country, to which an impetus was given by a Report on 'Co-operation in Technical Education', issued by the Board of Education after conference with representatives of local education authorities.

A similar movement is at work in the sphere of adult education, and tribute should be paid to the service rendered by the British Institute of Adult Education, the universities, and such voluntary bodies as the W.E.A. Conscious of regional considerations in their own service, educationists have shown a deep interest in the findings of the Royal Commission on Local Government in Tyneside. Under powers of the Physical Training and Recreation Act, 1937, two national advisory councils have been set up—one for England and Wales, and another for Scotland, and, similarly, grants committees have been established and a number of area committees. Under the Education (Deaf Children) Act, 1937, deaf children will attend a suitable school at 5 instead of 7 years of age—a small but valuable reform.

The clauses of the Factories Act, affecting the working hours of young persons between 14 and 18 years of age, have attracted close attention, and much consideration has been given, in conjunction with the Home Office, to the problem of juvenile delinquency and the better provision of approved schools and remand homes, and also expert child guidance. The National Film Institute has emerged as a co-ordinating force in the use of the film in schools; and on both sides of the Tweed valuable pioneer work has been done in visual teaching; while in co-operation with local authorities, the B.B.C. has rendered excellent service to adult education and in school broadcasting.

On the important subject of finance, there is little new to record; and the basis of government grant remains the same, in spite of strong representations by local authorities. (W. O. L. S.)



London County Council]

A SECONDARY SCHOOL

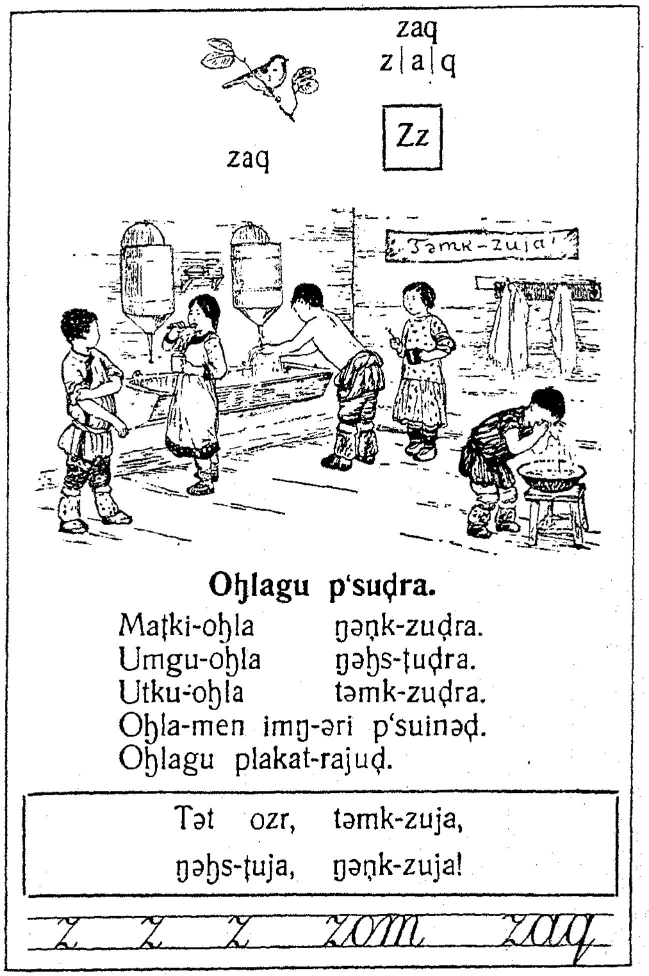
EDUCATION: GENERAL TRENDS. The world movement for improved physical education and training for the young, the adolescent, and the adult has been far and away the most conspicuous and significant trend in general education of recent years. Though it is indeed a world movement, having, for weal or woe, political significance and momentum, and though it is but a particular phase of a universal youth movement, it has in each country its own characteristics. In Great Britain, it is not solely due to State initiative and enterprise, nor is it solely financed out of public funds, but it embraces both State and voluntary agencies, knows no social, caste, or religious barriers or classes, and is felt to have, not merely a physical, but a psychological and a spiritual quality and value. It influences the organization and curriculum of schools, colleges, and universities, so that a new personnel must be trained to meet its requirements in the two national colleges of physical education ; it affects public policy and administration, both central and local, in such matters as housing, social hygiene, and prison reform ; and it raises the challenging question, put by the head master of Mill Hill School: What do we mean by physical education ? It has thus reawakened the civic and social conscience of the nation, and the foundation by Lord Nuffield of a new college in Oxford for the furtherance of the social sciences is indicative of the same new spirit and new conception of education. A nation, in short, must not only educate its children ; it must educate itself. In Germany, Russia, and Italy, the movement has been much more centralized, subsidized, and controlled by State or semi-State agencies, so that in those countries the Scout movement has been either eclipsed or transformed or absorbed, and a decided check has been given to religious associations of youth for purposes of physical and moral education, particularly in Germany and Italy. Even in the Far East, in China and Japan this emphasis on organized physical education is a central feature of national educational policy, and it is illustrated no less in Africa and particularly in the recent Report on Native Education in East Africa.

Peculiar to German education, but spreading throughout the Continental countries and with its advocates in Britain and America is the associated system of youth labour camps. That education must be less academic and more practical, less superficially cultural, and more serviceably efficient and utilitarian, more civic and less private and personal, is the keynote everywhere, although in the democratic countries there is ceaseless vigilance to maintain the cause of individuality and freedom in education. In every direction this enlarged corporate view of education is manifest; in the village college movement, whether in Europe or the antipodes, in the steady growth of the modern universities; in the concentration of new benefactions and new responsibilities in the older universities, *e.g.* at Oxford and Cambridge, in such new community centres as those at Slough and Welwyn (*see* EDUCATION: MORAL AND RELIGIOUS), or at Achimota in West Africa, or Fairbridge in West Australia; in the extraordinary growth of school camps, journeys, and cruises.

Such a rejuvenation and rehabilitation of education calls for the overhaul of its methods of educational assessment, and at the present time every aspect of the examination system is under critical scrutiny and reorganization. Dissatisfaction with current examination technique in Britain has been focused in Hartog's *An Examination of Examinations* and in the Board of Education's pamphlet on special places examinations. More particularly the school certificate examinations conducted by the various universities are challenged as being a hindrance and not an aid to true education. The tendency is for local education authorities and universities to come into still closer contact and co-operation with the central authorities. Indeed, universities both in the old world and the new are at present so preoccupied with problems of physical education and the training of teachers that some apprehension is felt lest their traditional function of the dissemination of higher education, the advancement of learning, and of research be hindered or diverted.

But a more significant feature of world education is the encroachment of the State upon the traditional and original autonomy of the universities. Nowhere is that more acutely expressed and felt than in and under the Central European dictatorships. Personnel has been transformed, studies have been wrested from their proper position as independent forms of truth and inquiry, and indoctrination has permeated the higher learning. Even in the midst of the civil war the head of the Spanish insurgent government (General Franco) found himself able to create by edict an Institute of Hispanic Studies.

But the characteristic individualism of education among the English-speaking nations has not been seriously challenged by the growth of State assistance and control, and there is every evidence of vigilance on the part of the teaching profession and of local education authorities to maintain the tradition of freedom in education ; freedom in technique, in organization, in time-tables, in curricula, in methods of discipline. This concern for freedom finds further expression in the increasing activities of parents' associations in the United States and in the extending influences in Britain of such bodies as the P.N.E.U. and the Dalton Association and the Montessori Society. A further indication of the contrast between democratic liberty and freedom in education and Continental dictatorship in school and university is to be found in the growth of the library movement. Increasing provision is made for school libraries, for trained librarians, for co-operation


zaq
z|a|q
Zz
zaq
Təmk-zuja!

Oɧlagu pʻsuḍra.

Maʈki-oɧla ŋəṇk-zuḍra.
Uɱgu-oɧla ŋəɧs-ʈuḍra.
Utku-oɧla təmk-zuḍra.
Oɧla-men imŋ-əri pʻsuinəḍ.
Oɧlagu plakat-rajuḍ.

Tət ozr, təmk-zuja,
ŋəɧs-ʈuja, ŋəṇk-zuja!

z z z zom zaq

H.M. Smolka. Published by the Educational Publishing House, Leningrad]

PAGE FROM A SOVIET SCHOOL BOOK. THE CHILDREN OF ARCTIC ASIA ARE BEING TAUGHT TO READ BY MEANS OF PRIMERS PRINTED IN THEIR OWN LANGUAGES WITH NEWLY CREATED ALPHABETS between public and school libraries, for exchange facilities between university libraries of different countries, and in Britain for the important work of the National Library for students. In this development there is further found that international note which is expressed in the growing number of foreign students in residence in universities, colleges, and schools. The extension of empire studies synchronizes with the rapid development of the University of London as an imperial university influencing education through the Empire. On the other hand, technical education, whilst sharing in the general process, still lacks full public recognition and support save in its ancient homes, Germany and Switzerland. At the present time the demand for such education comes rather from the employee than from the employer, and there is a world-wide need for fuller and more sympathetic participation by industry in the sphere of technical education. Nevertheless, vocational guidance is an increasing preoccupation of teachers and administrators, so that on the one hand national governments issue pamphlets on the choice of careers, and on the other hand schools and colleges appoint careers masters or organize appointments bureaux. Their work in America is facilitated by that of vocational guidance clinics and in Britain by the Institute of Industrial Psychology. The authorities in Russia, Sweden, Belgium, France, and Britain make their contribution to this problem in the appointment of professional psychologists, psychiatrists, and social workers: education is thus conceived to be a social service, constructive, cultural, civic, and remedial.

Peculiar to contemporary education is the problem of the falling birth-rate, the effects of which are being felt, in every country at every educational level, and in every type of school or college. In Britain, preparatory schools, already seriously affected by the competition of State schools, are especially threatened, even though the improved economic conditions of the modern small family tell in their favour. Public schools are also awakening to the untoward effects of the fall in the child population, the menace of which is only disguised by the raising of the school-leaving age, the extension of secondary and university education, and the reduction in the size of classes. It has its counterpart in the growing importance of practical subjects in education and of the plea for education for civic and economic efficiency. Dialectic materialism influences education no less than political and social organization. Can the school save democracy? Can democracy save its schools? These are questions asked on both sides of the Atlantic, and the issue at stake in philosophy and education throughout the world is the same, that between a materialistic and a spiritual view of human society and individuality. (A. A. C.)

EDUCATION: MORAL AND RELIGIOUS.

The Coronation year witnessed in Great Britain a widespread, deep, but not sensational response to the Archbishop's recall to religion. Perhaps its most important practical expression was the concordat between the State and the Church, whereby, for a limited term of years, building grants were made available for the provision of non-provided Church senior schools. The opportunity has, on the whole, been quickly seized, and the religious bodies, particularly the Church of England and the Roman Catholic Church, have been active in building senior schools under the new regulations. The grants have only been made in return for important concessions in the matter of appointments to the staffs of non-provided schools, and much will depend upon the wisdom and forbearance with which the question of 'reserved' teachers is handled. Accompanying this development, and integral to it, has been the further steady improvement of syllabuses in religious instruction for both elementary and post-primary education, but the graver and more difficult problem of the training of teachers adequately equipped both in knowledge and technique for the work of definite religious teaching has not made much headway. The Institute of Christian Education is a new and promising venture in the general cause, while the Le Play Society continues its parallel useful work in promoting civic and moral education.

The most striking contribution to general, moral, and religious education for the young (apart from the traditional methods of organized religion) lies, however, in the general and widespread development of club work. Four illustrations of this are: (1) the village colleges (*see* ELEMENTARY

Wide World Photos]

VOTING FOR THE CAPTAIN OF ST. BRIDGET'S SCHOOL, LIVERPOOL, IS RUN ON REAL ELECTION LINES

Education); Village Colleges and Community Schools; (2) the Clubland centre in Camberwell, founded by the Rev. James Butterworth and exhibiting an extraordinarily complete range of moral, religious, social, and educational activities for youth; (3) the Slough Social Centre, founded by Mr. Noel Mobbs and opened by Queen Mary, a venture which opens a new chapter in communal, moral, and social re-education, and illustrates the characteristic English combination of voluntary and State effort; and (4) the St. George's Club for Jewish boys, founded by Mr. Basil Henriques, and its older-established counterpart for Jewish girls, founded by the Hon. Lily Montagu. Under the stimulus of such developments, the earlier and famous organizations for the moral and religious education of youth—the Boys' Brigade, the Church Lads' Brigade, and the Scouts and Guides Movements—have shown rekindled enthusiasm and activity. In every direction, however, the need for educated leaders is felt, and the response must come, not only from the public schools and the secondary schools, but from the rank and file of these organizations themselves. Hence the rapidly increasing number of training schools and conferences addressed to this end. The moral re-education of prisoners, particularly of young offenders, continues to receive close and sympathetic consideration in many quarters stimulated by the known interest and concern of the Home Office and the Board of Education. The system known as Borstal institutions is being extended and increasingly approximated to ordinary educational and not to traditional penal practice. Both practical and theoretical aspects of the remedial education of delinquents were considered at a Home Office conference in Dec. 1937, while a recent circular also advocates the boarding out of young offenders under suitable conditions in approved families.

A different phase of moral and religious education is illustrated in the continued development of broadcast religious services and addresses and, in a lesser degree, of films for religious purposes in schools and places of worship, while at the more advanced levels of religious education two developments call for concluding comment. The Archbishop's Commission on Doctrine held its final meetings, and its report, which cannot but have far-reaching influence throughout the churches in communion with the see of Canterbury, was published in Jan. 1938. Similar note must be taken of the inquiry recently begun into the problems of theological and religious training for ordinands for the ministry. This is a particular instance of a widespread movement for the reorganization and reform of the professional and technical training required for the higher callings. That the need is so keenly felt and is receiving so serious a response is the best evidence of vitality in the general cause of moral and religious education in Great Britain. (A. A. C.)

Fox Photos]

BADMINTON IN PROGRESS AT THE SLOUGH SOCIAL CENTRE

EDUCATIONAL ASSOCIATIONS. In England the educational associations of major interest to parents and enjoying their co-operation are:

The Parents' National Education Union (26, Victoria Street, S.W.1), which continues its work of helping parents and teachers to train and teach according to the principles and methods advocated by Miss C. M. Mason. More and more schools are adopting these methods, and teachers trained at the House of Education, Ambleside (now known as Charlotte Mason College), are in increasing demand. A new principal, Miss Van Straubenzee, has been appointed, and the training is being extended to three years, or one year for university graduates. The jubilee of the foundation of the union falls in May, 1938.

The National Froebel Union (18, Adam Street, W.C.2), which held its jubilee in December. Its main work lies in the provision of trained teachers for all types of schools (especially in relation to younger children).

The Home and School Council of Great Britain (29, Tavistock Square, W.C.1), which continues its activities in promoting child study and the formation of parent-teacher associations and, to meet an ever-increasing demand, has published a handbook on the technique and principles of parent-teacher co-operation.

New Ideas in Education (secretary: Miss C. Lodge, Holmwood Cottage, Holmwood, Surrey), which at its last conference paid tribute to its late president, Mr. E. G. Holmes, the famous author of *What is and What Might be.*

The Association for Education in Citizenship (10, Victoria Street, S.W.1), which has as its object to advance the study of and training in citizenship, by which is meant training in the moral qualities as well as acquisition of a knowledge of the modern world. Its publications include *The Citizen*, a bibliography of social studies, and *Training for Citizenship in Secondary Schools.* A conference on *The Challenge to Democracy* was summarized in a volume, *Constructive Democracy* (1938).

The Nursery Schools Association (8, Endsleigh Gardens, W.C.1), which celebrated in 1937 the centenary of Froebel's birth. (H. Fn.)

In the United States the counterpart of the P.N.E.U. is *The Parent-Teacher Association*, an organization devoted to child welfare through home and school co-operation and parent education. More than 26,000 of these local associations united under the name of the National Congress of Parents and Teachers. Founded in 1897 as the Congress of Mothers, it now embraces fathers, mothers, teachers, and other interested citizens, while the name has been changed, also, to include them. It maintains headquarters in Washington, D.C., and has as its present function to create public opinion in favour of better homes, better schools, and better communities, and to encourage co-operation between home and school. It publishes carefully outlined studies to acquaint the members with physical, mental, and emotional conditions of children and how to meet their needs. The Congress of Parents and Teachers publishes the *National Parent-Teacher*, a monthly magazine furnishing authoritative information on the rearing and education of children. It publishes, also, many other pamphlets and leaflets.

The International Federation of Home and School, dating from 1926, now has its headquarters in London, includes 27 countries in its affiliations, publishes a quarterly magazine *Home and School*, and held its 1937 biennial conference in Paris. The British constituent is described above. (*See* also TEACHERS' ORGANIZATIONS.)

EDWARDS, THE MOST REVD. ALFRED GEORGE, British divine and first Archbishop of Wales; born at Llanymawddwy, Nov. 2, 1848; died at St. Asaph, July 22, 1937. A biographical notice of him appears in the *Ency. Brit.*, vol. 8, p. 19. His energetic pilotage of the Welsh Church in the early years of its disestablishment achieved such excellent results that the Archbishop confessed that the disestablishment had actually proved to be a benefit. He resigned in 1934.

Dr. Edwards married, first, Caroline Edwards (*d.* 1884), second, Mary Garland (*d.* 1912), and third, Margaret Armitstead. His surviving son, Capt. Harold Edwards, is Chancellor of St. Asaph. In 1927 Dr. Edwards published his *Memories*.

EGYPT (*Misr*), an independent kingdom of north-east Africa; bounded N. by the Mediterranean, S. by the Anglo-Egyptian Sudan, N.E. by Palestine, E. by the Red Sea, W. by Tripoli and the Sahara. Capital, Cairo; ruler, King Farouk (*q.v.*); flag, green, with a white crescent, having three five-pointed white stars in an equilateral triangle between the horns, which point towards the flagstaff.

Area, Population, etc.—Area, *c.* 380,000sq.m. (13,500 cultivated); pop. (1937), 15,904,525. Over 90 per cent. are Moslems, with some 8 per cent. Christians and 0·5 per cent. Jews; and the language of the overwhelming majority is Arabic. Education is compulsory between the ages of 7 and 12 at 2,748 'maktabs', attended (1934–35) by 558,628 pupils. There were also, during the same period, 903 other 'maktabs', 38 high elementary schools, 158 primary schools, 33 secondary schools, and a State university. Cairo had (1937) a population of 1,307,422; other leading cities (1927 census) are: Alexandria, 573,063; Port Said, 104,603; Tanta, 90,016. (X.)

History.—On Jan. 12, 1937, Sir Miles Lampson presented his credentials as first British ambassador to Egypt, and the British officers holding executive rank in the Egyptian army left the service. On Feb. 2, implementing the provision in this respect in the Anglo-Egyptian Treaty of Alliance, Egypt issued an invitation to the Capitulatory Powers to a conference on the question of the abolition of the Capitulations and the reorganization of the mixed tribunals. This conference opened at Montreux on April 12, and on May 8 a convention was signed abolishing the Capitulatory régime and reorganizing the mixed tribunals (*see* CAPITULATIONS).

Pursuant to the special provision in the Anglo-Egyptian Treaty, Egypt, on the recommendation of Great Britain, was admitted to the League of Nations on May 27 at a sitting of the Assembly over which His Excellency Rusto Arras, Turkish minister of foreign affairs, presided.

On July 25, His Majesty King Farouk returned from Europe, where he had spent the summer. On the 29th he came of age, the regency council was dissolved, and the King took the oath of fidelity at an extraordinary session of the Egyptian parliament. Two days later, in accordance with custom, the cabinet resigned and the King entrusted the formation of a new one to the outgoing premier, Mustapha Nahas Pasha, who took the opportunity of effecting a reconstruction.

On Nov. 18 King Farouk inaugurated his first parliament. Ten days later an unsuccessful attempt was made on the life of the premier, Mustapha Nahas Pasha, by a young Egyptian, called Abdel Kader Izzeddin. The inquiry showed that he belonged to the 'Green-Shirts', an organization of young men hostile to the Wafd, and that he had been in close touch on the spot with Arab leaders in Palestine, Syria, and Iraq. On Dec. 7 His Majesty inaugurated the XVth Ophthalmic Congress, which was attended by delegates from all the world. On Dec. 30, the King dismissed the Nahas cabinet and entrusted the formation of a new ministry to Mohamed Mahmud Pasha, who constituted a cabinet drawn from all parties in the country except the Wafd.

The change in cabinet was due to a disagreement between the King and Nahas Pasha on the question of the interpretation of the royal prerogatives and the activities of the 'Blue-Shirts', a body of young Egyptians organized by the Wafd, whose supreme chief was Nahas Pasha. The trouble really dated back to the coming of age of the King, when the cabinet tried to alter the army oath from allegiance to the King alone to allegiance to the constitution as well. The personal situation of the King was alleviated by the nomination of Aly Maher Pasha as head of the royal cabinet and thus political adviser to His Majesty. To this appointment the cabinet had raised objections, but gave way when the King intimated that he intended to exercise his powers in regard to nominations to his personal staff. The crisis became acute early in December owing to the King's refusal to sign the decree for the nomination of a Wafdist to a vacancy in the Senate.

On Dec. 24 the Wafd Parliamentary Committee, comprising the Wafd majority in both chambers, recorded at a public meeting its confidence in Nahas, and each of its members took an oath of implicit obedience to him. As a last effort to reach a satisfactory solution the King, on Dec. 29, made two alternative suggestions to Nahas Pasha, *viz.* the formation of a coalition cabinet of all parties, or a commission composed of past and present prime ministers and other high political and legal officers, the verdict of either of which on the questions at issue between palace and cabinet he was prepared to accept. Nahas Pasha rejected the proposal for a coalition cabinet, but accepted arbitration in principle if the commission were composed of jurists and not politicians. Then it was that the King decided to dismiss the cabinet, on the ground that he had in his possession ample proofs that the country did not approve of the methods of this cabinet, which were not in accordance with the spirit of the constitution and restricted public liberty.

Trade, etc.—Egypt had another prosperous year in 1937. The State accounts, closed on April 30, the end of the financial year, showed a surplus of £E.1,311,000. This brought the general reserve up to £E.34 millions. For the seven months ending Nov. 30, a further increase in revenue of £E.2 millions was recorded, mainly in customs, which produced £E.600,000 more revenue than the corresponding period of the preceding year.

A record cotton crop came on the market in Sept. 1937, *viz.* 11,140,000 kantars, an increase of 2 million kantars over the previous record. The increase in production more than compensated for the decrease in prices. The area

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ROYAL WEDDING IN CAIRO. BEDOUINS FIRING THEIR GUNS AS THEY LED THE WEDDING PROCESSION

Fox Photos, Ltd.]

POLICE WITH DRAWN BATONS AND SUPPORTERS ESCORT NAHAS PASHA, LEADER OF THE WAFD, ON HIS RETURN FROM PORT SAID

under cultivation was 1,978,000 feddans, representing an increase of 15 per cent. over the previous year, and the average yield improved to 5·52 kantars per feddan.

Trade during the year was brisk. For the 11 months ending Nov. 30, imports amounted to £E.34,500,000 and exports to £E.36,160,000, an increase of £E.5,910,000 and £E.8 millions over the corresponding period of 1936. Main increases under imports were kerosene £E.420,000, cotton piece-goods £E.700,000, coal £E.720,000; and, under exports, cotton £E.5,900,000, and gold £E.1 million. The year again ended with a trade balance in favour of Egypt.

Early in December Sir Thomas Barlow and Mr. James Ainsley visited Egypt as a good-will mission on behalf of the Manchester Chamber of Commerce to investigate the situation from the point of view of Egyptian purchases of British manufactures, particularly textiles. In view of Egypt's favourable trade balance, their investigations were directed to seeing how best this could be used to develop a two-way trade between the two countries.

During the year parliament ratified an agreement with the Suez Canal Company, giving the Egyptian government an interest in the undertaking and Egyptians a greater part in the administration. (*See* SUEZ CANAL.)

The development of internal communications has been stimulated by the Anglo-Egyptian treaty. In 1936, there were 2,973 kilometres of standard-gauge, and 1,413 kilometres of narrow-gauge railways; and on May 1, 1937, a fast diesel railcar service between Cairo and Port Said was instituted. There were, in 1936, 44 mercantile steamships (registered net tonnage 40,505) carrying the Egyptian flag, and 173 sailing vessels (international tonnage 11,662). In March, the all-air service between England and Egypt was inaugurated, and on June 1 the new service was begun from Southampton to Durban via Alexandria and Cairo.

Finance and Banking.—The monetary unit is the gold Egyptian pound of 100 piastres (one £E. = *c.* £1 0s. 6¼*d.*). The budget for 1937–38 has been balanced at £E.36,116,500. Revenue is obtained by direct taxation of agricultural land and of houses in the principal towns, and by indirect taxation on all imported and a few exported commodities. The National Bank of Egypt (*Bank Misr*) is an Egyptian corporation owned by its shareholders; but all the other 15 commercial banks are either branches of foreign banks or companies founded mainly with foreign capital.

Defence.—In order that she may take her full share of the burden of defence, in accordance with the treaty of 1936, Egypt is enlarging her army. The British military adviser to the government, Major-General Marshall-Cornwall, submitted a report in February, acting upon which the government propose to increase the army to about 22,000 men during the coming three or four years. (A. MN.)

ELECTIONS.—The parliamentary by-elections to the British House of Commons were very much more numerous during 1937 than in most years; this was largely due to the peerages conferred on the occasions of the Accession and Coronation of King George VI, and to the resignation of Mr. (Earl) Baldwin and the reconstruction of the Cabinet arising therefrom; though, as will be seen from the table below, no less than 11 out of the 26 were due to the decease of the sitting member.

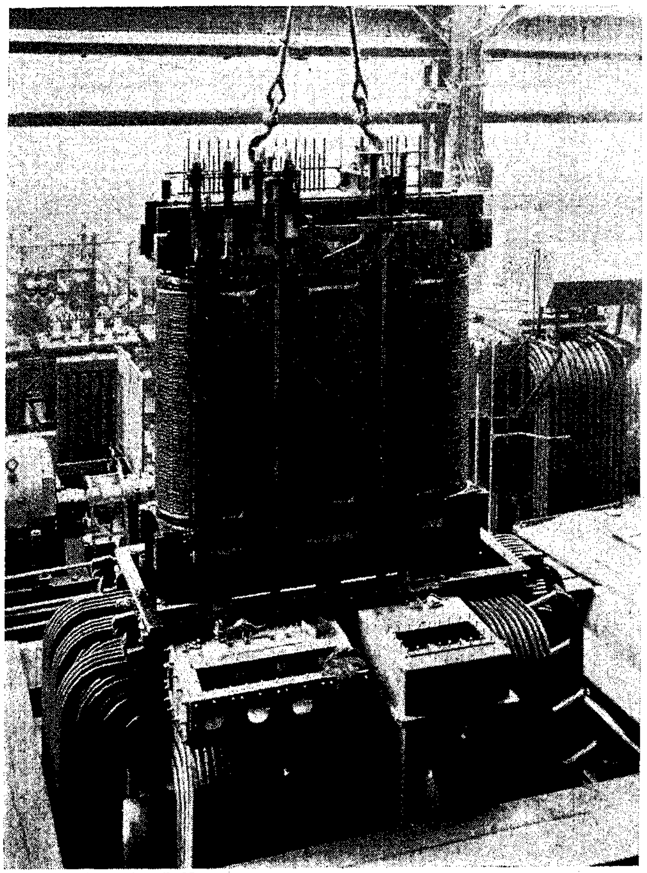
At the end of the year four constituencies were vacant: Scottish Universities (1 seat), Farnworth, and Pontypridd, owing to the deaths of the Rt. Hon. Ramsay MacDonald (*q.v.*) (N. Lab.), Mr. Guy Rowson (Lab.), and Mr. David Lewis Davies (Lab.); and Ipswich, owing to the elevation of Sir John Ganzoni, Bt., to the peerage.

U.S.A.—There were elections in several of the States during 1937. In Michigan (April 5) and Kentucky (Nov. 2) the Democrats made small gains. A referendum held in Alabama on March 10 resulted in the State exchanging its dry law for a dual system of local option and State control of liquor stores; Tennessee (Sept. 23) and Georgia (June 8) remained wholly dry. The mayoral election for New York City resulted in a victory for La Guardia (*q.v.*), who stood

Constituency	Date	Cause	Party and Majority	Result
Birmingham, West	April 29	Death	Cons.: 2,920	No change
Bucks: Buckingham	June 11	Peerage	Cons.: 5,099	No change
Cheltenham	June 22	Resignation	Ind. Cons.: 339	Gain from Cons.
Cheshire: Stalybridge and Hyde	April 28	Resignation	Cons.: 334	No change
Combined Universities	March 22	Death	Ind.: 1,644	Gain from Cons.
Cornwall: St. Ives	June 30	Peerage	N. Lib.: 210	No change
Dorset, Northern	July 13	Death	Cons.: 543	No change
Glasgow: Hillhead	June 10	Peerage	Cons.: 6,337	No change
Glasgow: Springburn	Sept. 7	Death	Lab.: 5,978	No change
Hastings	Nov. 24	Resignation	Cons.: 7,184	No change
Herts: Hemel Hempstead	June 22	Peerage	Cons.: 7,645	No change
Holland with Boston	June 24	Death	N. Lib.: 7,290	No change
Ilford	June 29	Resignation	Cons.: 9,319	No change
Islington, North	Oct. 13	Death	Lab.: 1,296	Gain from Cons.
Kent: Tonbridge	March 23	Death	Cons.: 10,655	No change
Kingston-on-Thames	July 1	Peerage	Cons.: 9,915	No change
Manchester: Gorton	Feb. 18	Death	Lab.: 4,758	No change
Oxford University	Feb. 25	Resignation	Ind.: 3,663	Gain from Cons.
Plymouth: Drake	June 15	Death	Cons.: 4,734	No change
Richmond	Feb. 25	Resignation	Cons.: 12,837	No change
St. Pancras, North	Feb. 4	Resignation	Cons.: 268	No change
Surrey: Chertsey	July 2	Death	Cons.: 9,045	No change
Surrey: Farnham	March 23	Peerage	Cons.: 12,788	No change
Wandsworth, Central	April 29	Death	Lab.: 485	Gain from Cons.
Worcester: Bewdley	June 24	Peerage	Cons.: 6,543	No change
York	May 6	Resignation	Cons.: 4,059	No change

in the Republican and Fusionist interests. Bitter feelings were aroused in the campaign for the governorship of New Jersey, which resulted on Nov. 2 in the election, by a somewhat doubtful majority, of Senator A. Harry Moore, governor twice previously, over Lester H. Clee, Republican.

ELECTRICAL ENGINEERING. The amount of electric energy generated for public sale in 1937 was greater than ever before. Increase in load forced an enlargement of generating capacities. Many superposed turbogenerators were introduced. One new unit (22,000kw.) was designed to operate at 925° F. and 2,400lb. per sq. in. pressure, the highest pressure to be used with a turbine of this size. Many new units operate at 3,600r.p.m.; some are hydrogen cooled. New large hydro projects were begun or projected, particularly in Italy and the U.S.S.R. In the United States the Boulder Dam project, in which are installed the largest water turbines in the world, began operation.



Bruce Peebles & Co., Ltd.]

5,000-KVA. 21,000/6,000-VOLT TRANSFORMER, SUPPLIED TO A LONDON ELECTRIC SUPPLY COMPANY, BEING LOWERED INTO ITS TANK

In the field of transmission and distribution high-voltage d.c. transmission underwent intensive study; use of capacitors on lines increased greatly; a 220-kv. cable was put in service; and Petersen coils were used in the United States after long popularity in Europe.

The expansion of public services' capacities and a general industrial and domestic demand for electrical equipment kept the electrical manufacturing industry in most countries working near capacity. Outstanding developments in design, size, or other characteristics were, however, few. In Europe 36-kv. generators were being built; but none had been produced in the United States. In the U.S.S.R. a 100,000-kw. 3,000r.p.m., generator under construction was the largest to be constructed in Europe. In the United States the electrification of industry neared completion.

At the same time, electric appliances available to domestic consumers were far more extensively used in Great Britain than heretofore. Electric refrigerators, for example, of which there are more than 5 million in use in the United States and almost as many pro rata in Canada were increasingly in demand.

Rural electrification (*q.v.*) was vigorously pushed. In transportation important electrifications were under way in Great Britain, France, Germany, Italy, South Africa, Soviet Russia, and the United States. Trolley buses increased in popularity. They were extensively used in some European countries (more than 1,200 in London alone), and the demand for them in the United States steadily increased. In England a new electric motor car was introduced. The use of electric drive for ships decreased, or at most remained static, although the Atlantic speed record was held by the electrically driven *Normandie*.

In communication, developments included the widespread use of carrier telephony, television broadcasting, the use, both experimental and commercial, of coaxial cables, and the contemplated commercial use of facsimile reproduction. There was no important development in radio broadcast transmission or reception. Television broadcasting, which had been carried on in Germany, was begun in Great Britain, France, and the U.S.S.R. In Great Britain, where the progress is greatest, it was standardized on 405 lines interlaced, 50 frames per second. Of considerable importance was the fact that television reception was obtained in one case at 80m. from the transmitting station, a greater distance than was originally considered possible.

Coaxial cables were installed in several countries. The 100th anniversary of Wheatstone's first use of the telegraph passed almost unnoticed, being a commentary on the decreasing relative importance of the telegraph in communication.

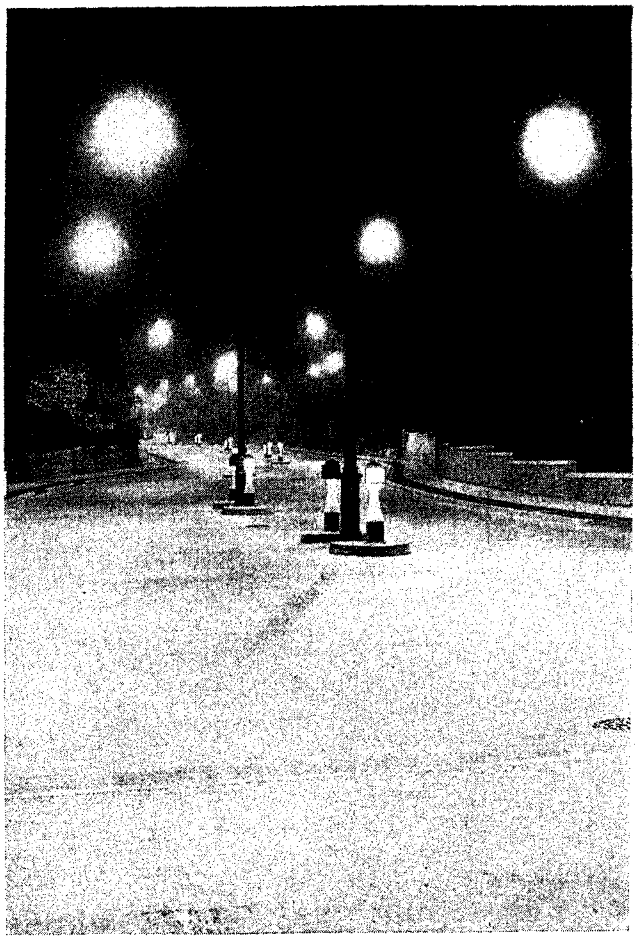
In the field of illumination, developments include appreciable increase in the efficiency of lamps, new gaseous lamps for highway illumination, and the beginning of the development of 'cold light', in which there are great potentialities not likely, however, to be available commercially for some years. In Great Britain discussions of illumination still included consideration of gas illuminants, but in the United States these are not now being considered.

ELECTRIC LIGHTING. Under the terminology of electric discharge lamps, progress centred in 1937 on sources employing mercury and sodium vapour. In Great Britain, some 70,000 mercury lamps went into service, approximately half for industrial, half for street lighting purposes. Evolving to regular volume production, there were sold in the United States approximately 65,000 mercury and 7,500 sodium lamps. Trial installations of sodium lamps increased in western Europe and the United States; they were largely confined to suburban highways and bridges. The majority of mercury vapour lamps (high-pressure types) in North America were installed in factories, largely because at 40 lumens per watt they approximately double the filament lamp output. On account of a deficiency in red, they were not found suitable for stores or offices, but proved especially decorative when applied to the lighting of shrubbery and trees and to the floodlighting of building façades.

Commercial sizes of mercury lamps in North America were 400, 250, 100, and 85 watts, to which in Great Britain were added 125 and 150-watt sizes. Sodium lamps in the United States were produced in 6,000 and 10,000 lumen sizes, the latter predominating. Experimental super-pressure mercury lamps appeared, notably the water-cooled quartz capillary types of 300 and 1,000 atmospheres. These sources produced a brightness exceeding that of the sun, with promise of high concentrations for optical projection.

Employing low-pressure mercury vapour in a tubular lamp and by coating the inside of the tube with compounds that fluoresce under the short-wave excitation, there were introduced new lamps noteworthy for high-efficiency colours. In America some three sizes, namely, 15, 20, and 30 watts, were standardized respectively 18, 24, and 36 inches long, and emitting white, blue, green, and pink light at some 40 lumens per watt.

There was made commercially available a lamp emitting radiation chiefly between 2,000 and 3,000 A., finding usefulness in killing air-borne bacteria, and for sterilizing food containers; also killing the spores of fungi, hence reducing moulds on meats and baked goods. In bulb form these special lamps began to find service in the medical treatments of superficial wounds and skin diseases.



Philips Lamps, Ltd.]

ROAD LIGHTING AT GLOUCESTER BY MEANS OF 'PHILORA' SODIUM LAMPS

An increase of some 10 per cent. in light output efficiency followed double-coiling the tungsten wire filament in smaller wattages of American-made lamps. European research concentrated upon more viscous gas within the bulb to reduce convection heat losses, chiefly employing the rare atmospheric constituent, krypton.

Lighting Materials and Applications.—A widespread usage of glass blocks and moulded plastic forms appeared in 1937, giving expression to architectural lighting. Transparent plastics incorporating fluorescent dyes gave further incentive to the use of ultra-violet or black light for interior decoration.

Notable surveys of schools indicated need of lighting intensities for classrooms upward of 20 foot-candles, and suggested more cheerful colours of paints. In factories, largely as a result of industrial lighting surveys in Great Britain and the United States, fixtures developed consisting of large hoods or indirect reflecting surfaces with silvered-bowl lamps, and more attention to the spectral or directional quality of light. A compulsory factory building code in England was a major incentive to better lighting conditions, while the British Government's study of the 'grumble point' produced data showing that artificial light is needed where daylight on the work falls to approximately 5 foot-candles.

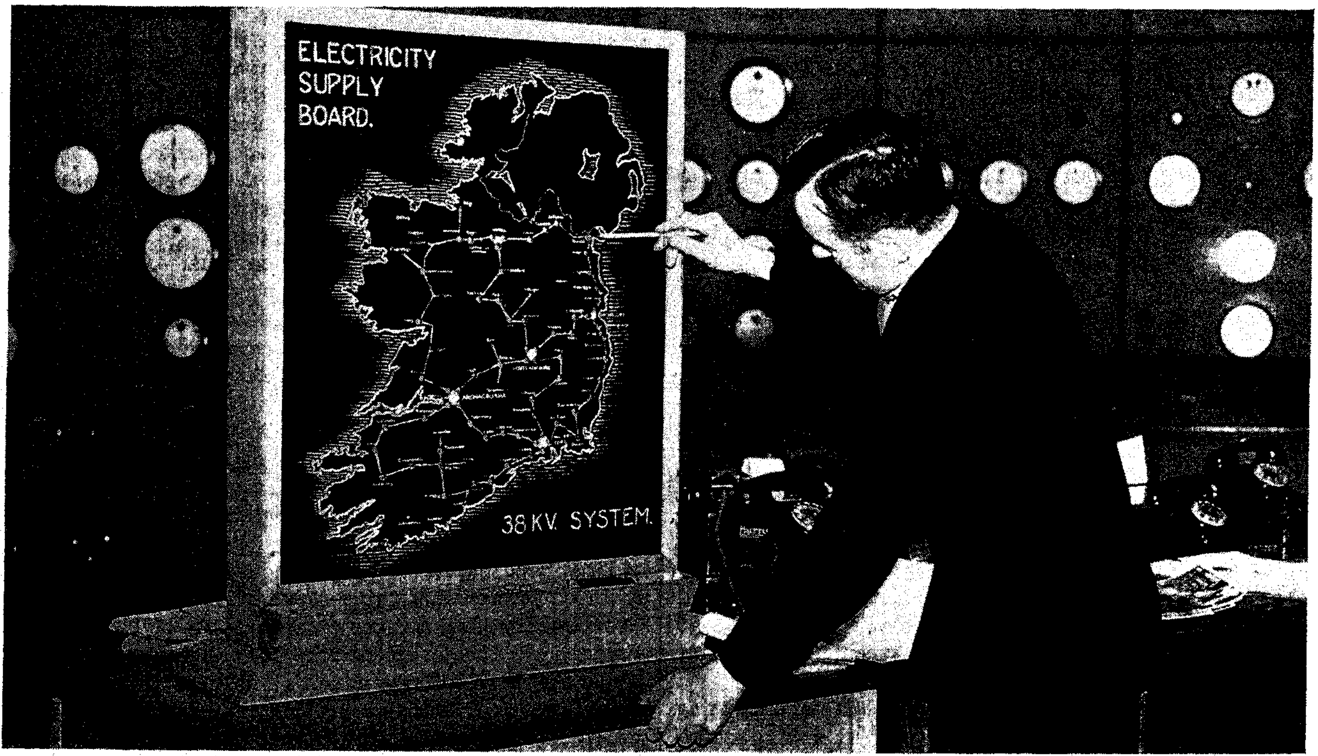
Polarizing screens reducing motor-car headlight glare were introduced experimentally, together with sealed-in small-size motor-car headlamps combining reflector and lamp bulb into one unit. Notable installations of outdoor lighting, particularly accompanied by water effects, were to be seen at the Paris and Düsseldorf Exhibitions, during the Coronation of King George VI, and in floodlighting of French cathedrals.

ELECTRIC POWER GENERATION. Electrical energy continues to be obtained in the conventional manner from fuel and water-power resources. Most of the available water-power sites which are economically important from the standpoint of electric power production and disposition alone have been developed. The majority of the hydro-electric developments that are being undertaken at the present time are justified economically for the production of electrical energy only when considered in connexion with irrigation, flood control, and navigation, or a combination of these factors. Undertakings of such broad scope are necessarily of a public nature and consequently have been carried on as complete or partial public or governmental enterprises. Although the amount of electrical energy obtained from hydro-electric generating stations is relatively large, the greater portion is produced from steam-driven prime-movers in fuel-fired generating stations. This type of undertaking has been restricted to the production and disposition of steam and electrical power, and as a result has been developed by private enterprise.

The principal improvement in 1937 in the hydraulic turbine has been the development of the adjustable blade propeller to improve the efficiency performance of the turbine under different water flow conditions. No major changes have been required or made in the design of generators driven by this type of prime-mover. Most of the steam-driven turbines in operation at the present time have been designed to utilize steam at moderate temperatures and pressures. Large increases in the output and radical improvements in efficiency of steam turbines have been obtained by materially increasing the temperature and pressure of the inlet steam. Inlet steam pressures and temperatures of 1,200lb. per sq. in. and 950° Fahrenheit respectively are used quite generally for most of the steam turbines now going into service. A few projects are under construction using inlet pressures as high as 2,400lb. per sq. in. These increased pressure and temperature requirements have made it desirable and essential that highest possible rotational speeds be used in order to keep the weights and dimensions of the stator and rotor elements as small as possible. This requirement of the steam turbine has resulted in the recent rapid supersedure of the 4-pole generating unit by the 2-pole unit.

The radical increase in steam temperatures and pressures has resulted in a vast increase in the output possible from steam turbines operating at speeds needed by the 2-pole generator. There are no similar unexploited features in the design of the 2-pole generator from which its output could be correspondingly increased to meet the turbine requirements. A material increase in the output of the 2-pole generator has been obtained from the summation of several incremental increases resulting from improved mechanical, electrical, thermal, and magnetic properties of materials, more effective ventilation and improved design proportions, and better utilization of materials. When using the best materials and design proportions available, it is still impossible to build the 2-pole, 60-cycle generators with air cooling in sufficiently large ratings to meet the electrical industry's present-day steam turbine requirements.

The additional output rating of the 2-pole, 60-cycle generator was obtained by using hydrogen as the cooling medium. As compared with air, hydrogen has a density of 7 per cent., heat transfer coefficient of 135 per cent., thermal conductivity of 700 per cent., and specific heat of approximately 100 per cent. With these properties, the



Fox Photos, Ltd.]

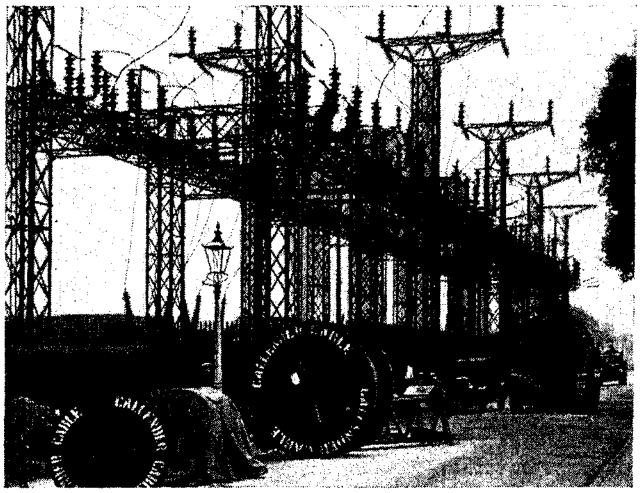
CORNER OF HUGE SWITCHGEAR ROOM OF THE SHANNON POWER SCHEME, NEAR LIMERICK use of hydrogen as the cooling gas makes it possible to obtain an increase in rating of approximately 15 per cent. over that obtainable with air cooling, on the basis of maintaining given rating and performance characteristics. Since the windage, friction, and ventilation losses are directly proportional to the density of the cooling gas, they are practically eliminated when hydrogen is used as the coolant. The increase in efficiency is on the order of 0·6 to 0·9 per cent., depending on the rating. Since a mixture of hydrogen and air is explosive over a range of approximately 82 to 12 per cent. hydrogen, it is necessary to maintain a high percentage of hydrogen in the machine in order to avoid an explosive mixture and a fire hazard. A similar increase in rating and improvement in efficiency performance without any explosion hazard can be obtained by using helium as the cooling gas. At the present time, however, the use of helium gas for this application is excluded on account of its scarcity and excessive cost. (C. M. La.)

ELECTRIC TRANSMISSION AND DISTRIBUTION. The year 1937 brought no fundamental changes in the transmission of electric power either over long or short distances. The technique of alternating-current transmission remains as before. Neither did its potential competitor, the direct-current transmission system, gain ground in practical application.

There has been some increase—as is traditional—in overhead line mileage. The recently established maximum voltage level for such lines has not been exceeded ; Boulder Dam's 287,000 volts still stand unchallenged. In the field of underground transmission, the most helpful contribution of the year may well be the additional operating experience gained with the world's only 220,000-volt single-conductor, oil-filled cable installation (put into operation in Paris, March 1936). The successful performance of this cable should strengthen confidence in underground transmission in this voltage class and in the reliability of such high-voltage cables.

The question of alternating current versus direct current is an old one. The renewed interest in the problem, quite apparent during recent years, is primarily a result of the very material development in static apparatus for conversion from one type of current to the other, coupled with the reasonable expectation that still further developments are not too remote. If the latter prognostication be true, the question arises whether it is possible to design a direct-current system superior to the conventional alternating-current system. The former would be devoid of certain undesirable features inherent in the alternating-current system, notably those affecting synchronism and stability which greatly increase and ultimately become unmanageable as transmission distances and blocks of power to be transmitted increase. It must not be assumed *a priori*, that the direct-current system, designed along the general lines now conceived and which, indeed, appear to embody real possibilities, might not be afflicted with offsetting difficulties in view of the fact that the new elements which will enter into it have not as yet reached ultimate development (conversion and switching equipment). Neither is the long-time effect of high direct-current voltages on line and cable insulation fully understood at present. Theoretical studies continued during 1937, although possibly at a slightly retarded pace. This decrease was no doubt caused by a fuller realization of the many major technical problems which still remain to be solved. Thus, practical high-voltage, direct-current transmission has been relegated to the state of a comparatively long-range proposition.

Progress was made during 1937 in development and application of equipment associated with alternating-current transmission. Thus there was further application of high-speed circuit breakers, which were recognized as the most effective single agent in combating the de-stabilizing effects of faults on important transmission lines. They help to keep the systems intact and operating by rapidly eliminating the faulty circuit. Further experience was also secured with ultra-high-speed, high-voltage re-closing circuit breakers, this type of breaker being particularly desirable for important single-circuit tie lines.

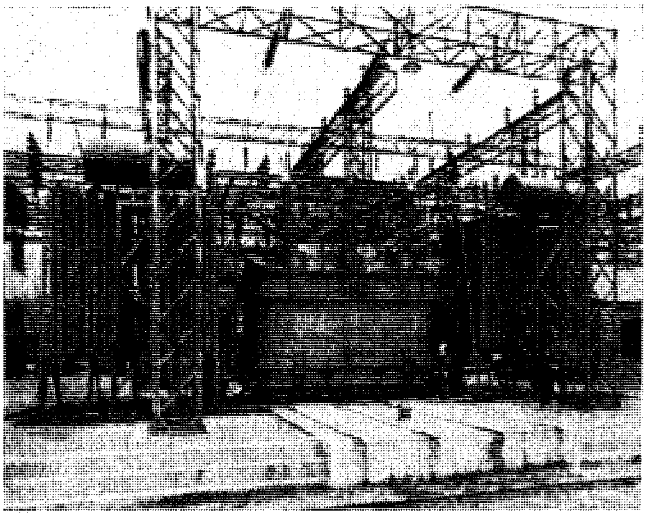

Callender's Cable & Construction Co., Ltd.]

WORK IN PROGRESS AT THE UXBRIDGE POWER STATION END OF A 66-KV. CABLE-LAYING CONTRACT

Noteworthy also was the further application of and experience with carrier-current relaying of important lines. The outstanding features of this type were selectivity and speed. It now seems to have become thoroughly established that this type of relaying hereafter will be much more frequently applied. Carrier currents have also been used recently for remote supervisory control.

Distribution.—The most significant general trend in electric distribution may well be the extension of service to rural districts. In some countries the economics of rural electrification was so unattractive that this class of development was relegated to the background, while the more favourably placed load areas were cultivated. The recent impetus imparted to rural electrification in many places has several explanations : first, the private companies having developed their urban systems and loads, had approached the part of their power-supply programme which began to include rural areas. Secondly, a marked increase in usage by the average rural customer had come about as a result of cheaper domestic appliances and farm devices. Thirdly, there was a general recognition of the social desirability of getting electricity to the farm for both lighting and power purposes. Fourth, a promotional influence was created in many countries by State (Federal) or municipal organs. (*See* also RURAL ELECTRIFICATION.)

As to plant, distribution efforts were directed towards the development of suitable, simple, and economic rural systems. Practical and relatively inexpensive but fully reliable designs in various forms for poles, lines, indoor wiring, etc., resulted. Furthermore, the establishment of appropriate rate structures was given much attention. With regard to the private companies, there is no doubt that extending service to rural districts quite frequently involves



British Thomson-Houston Co., Ltd.]

VIEW OF THE OCKER HILL STATION, SHOWING ONE OF THE B.T.H. 60,000-KVA., 132,000-VOLT TRANSFORMERS

a real element of risk. Where private companies are involved, it is reasonable to believe, therefore, that further progress in rural electrification will be dependent upon the rapidity with which initial losses may be recovered and the service already undertaken put on a sound economic basis.

During 1937, attention was given to the question of underground distribution in residential districts. Underground systems for this purpose are naturally costlier than overhead systems. So far, residential underground distribution is only sparsely adopted. The power companies, however, are cognizant of the situation, and studies were made to develop practical and inexpensive designs. The possibilities of reducing cost were limited by the requirement that reliability must be high.

ELECTRIC TRANSPORT, of late years, has become diversified into four rather distinct categories. These are: (1) electric trams and, in America, interurban railways, (2) electrically operated underground tube and, in some countries, elevated railway lines, (3) electrified trunk line railways, and (4) electric trackless trolleys, or trolley buses. While all of these types of electric transport have certain points in common, their most recent developments have followed somewhat divergent lines.

Electric Trains.—With the great development that has taken place in petrol-propelled and diesel buses, as well as in electrically propelled trolley buses, there has been a trend towards the substitution of rail-less vehicles in place of tram-cars. This trend has been most in evidence in the smaller cities, and in a few of the very largest cities, such as London, New York, and Paris, where there are extensive underground railway systems to supplement the surface transport facilities. In general, however, the effects of these substitutions have been smaller than is popularly supposed. For example, in American cities of over 500,000 population, where the largest part of the passenger transport business is concentrated, there has been an actual increase in the number of tram or ' street-car ' riders in recent years. Outside these cities the volume of street railway riding has declined. The chief interest in the United States has, however, centred in the progress being made with the new type of light-weight, fast, quiet car developed by the Electric Railway Presidents' Conference Committee. Rubber springing and improved control and braking equipment are the outstanding features of this design. Already a total of 645 of these cars have been built and put in service in seven cities. The first orders were placed as early as 1935, but it was not until 1937 that a sufficient number of units had been in service for a long enough period to permit accurate appraisal of results.

Experience during the first year of their operation in Brooklyn, N.Y., showed that their improved performance attracted 36 per cent. more riders than had been accustomed to patronize the older type of vehicles previously used. Similar results were reported from other cities. In every instance there was a substantial increase in schedule speed with the new cars. It is reasonable to expect, therefore, that cars of this type will play a dominant part in rolling-stock purchases during the next few years.

No cars of the ' Presidents' Conference ' design have yet been put in operation outside of the United States, although lively interest has been shown by tramway operating companies in all parts of the world. Patent arrangements have now been perfected in Italy, and building of this type of vehicle may be expected in the near future.

New cars of more conventional design have recently been put in service in many of the larger cities throughout the world. Improved appearance has been sought in some instances by streamlining the bodies. Particularly notable in this respect are the latest cars built for Moscow and other Russian cities.

City Electric Railways.—In the city electric railways—underground and elevated railway lines, the most interesting recent developments have taken place in London. There the London Passenger Transport Board has introduced new streamlined equipment having many points of superiority over the older equipment. There, also, the so-called metadyne control is being tried. This is an arrangement whereby a dynamotor is utilized to raise or lower the voltage on the propulsion motors as desired. Another interesting development in London is the pro-

London Passenger Transport Board]

ONE OF LONDON'S LATEST TROLLEY BUSES, WHICH ARE NOW REPLACING TRAM-CARS. ABOUT 2,500 TROLLEY BUSES ARE NOW IN SERVICE IN GREAT BRITAIN gramme for extensive use of welded rail-joints on the underground lines to eliminate the noise and jarring that result from the passage of wheels over rail-ends not in close and accurate contact. Welded rail-joints have long been widely used on tram lines, but their use on underground lines is something of a novelty. In the United States the Brooklyn-Manhattan Transit Company is experimenting with continuous sections of welded rail in lengths up to 1,000ft. as compared with lengths of about 270ft. in London.

Extensions of the city electric railway system have been undertaken recently in London, New York, Philadelphia, Paris, Moscow, and Buenos Aires. These, however, have been of local rather than of general significance. Similarly there have been many extensions of trunk line railway electrifications, particularly on the continent of Europe, but they have involved comparatively few new technical developments.

'Trackless Trolleys'.—Perhaps the most interesting recent development in the entire field of electric transport has been that of the trolley bus, or so-called 'trackless trolley'. Installations of this type were first made many years ago, but they did not turn out particularly well owing to limitations in the design of the vehicle. With the improvement in the petrol motor-bus, however, a better type chassis became available for trolley buses, and the newer vehicles are proving far more satisfactory than the old. About 2,500 of these trolley buses are now in service in Great Britain and more than 1,100 in the United States. London has about 600 in service, and proposes to replace its remaining tram lines during the next few years, thereby bringing its total of trolley buses to about 1,000. Moscow also has a large programme in prospect which will probably double the 389 trolley buses now operated there. Other cities all over the world are keenly interested in this development, and the next few years may be expected to see a rapid increase in the number of units in operation.

From the technical standpoint, the development of the so-called 'all-service' vehicle in use on the lines of Public Service Co-ordinated Transport in New Jersey, U.S.A., has attracted attention. This is a very flexible combination of trolley bus and gas-electric motor-bus, which can be operated under its own power or by power obtained from overhead electric wire. Some 500 of these vehicles are now being operated by the New Jersey company, and several other companies are experimenting with them. The added first-cost and extra weight involved in having duplex sources of power will probably tend to limit their use to districts where flexibility is of great importance, however, and trolley bus expansion may be expected, in the main, to follow more conventional lines.

WORLD'S LARGEST TRAMWAY SYSTEMS

As of Jan. 1, 1938

Name of System	Number of Cars	Miles of Track
Chicago Surface Lines	3,669	1,111
Städtische Strassenbahnen, Vienna .	3,370	178
Berliner Verkehrs-A.-G. . . .	2,996	358
Anglo-Argentine Tramways, Buenos Aires	2,931	380
Philadelphia Rapid Transit Co. .	2,146	623

Street railways in the city of New York operate approximately 2,600 cars on 742 miles of track, but the operation is divided among several systems.

WORLD'S LARGEST TROLLEY BUS SYSTEMS

As of Jan. 1, 1938

Name of System	Number of Trolley Buses	Miles of Trolley Bus Route
London Passenger Transport Board .	594	122
Public Service Co-ordinated Transport, N.J.	500	287
Mostrambaytrest Raduskaya, Moscow	389	Not available
Indianapolis Railways . . .	152	96
Portland Traction Company . .	140	38

CITY ELECTRIC RAILWAY SYSTEMS OF THE WORLD (UNDERGROUND OR ELEVATED)

As of Jan. 1, 1938

	Miles of Route	Cars
BARCELONA	37	92
BERLIN	47	1,146
BOSTON	22	528
BUENOS AIRES	22½	204
CHICAGO	81	1,640
CLEVELAND	12	32
ELBERFELD	10	67
GLASGOW	7	50
HAMBURG	25	300
LIVERPOOL	6½	57
LONDON	220	3,154
MADRID	12	144
MOSCOW	16	74
NEW YORK	284¾	8,257
PARIS	78	2,573
PHILADELPHIA	23¼	491
PRAGUE	15	No data
SYDNEY	2½	No data
TOKYO	8	20
VIENNA	16½	384

ELEMENTARY EDUCATION. In Great Britain the issue of an entirely new volume of *Suggestions for the Consideration of Teachers* (Board of Education), 1937 was as notable a landmark in the history of English education as was that of the original volume 30 years ago. If the present volume lacks the style and the masterly range of its forerunner, the terminology of junior and senior schools which it employs expresses the transformation of the English primary school system which has intervened, while the significant change in the order in which the subjects of the curriculum are discussed expresses a distinct shifting of values. Physical education, hygiene, and craftwork all receive marked attention, the League of Nations is discussed as a 'subject' in an appendix, and the influence of mechanical aids to education is felt throughout the work. The senior school is indeed the dominant theme, as it has been the dominant interest, of English educational administration for nearly 20 years. Not yet has the junior school received its own proper attention, though nursery schools for different reasons have obtained increasing support.

Two related but contrasted problems have occupied the educational stage in 1937: the problem of a shifting population and the creation of child-congested areas in the new housing estates on the fringe of every large city, and that of the falling child-population, particularly felt in the older parts of a city, so that while new schools in the outer ring are overcrowded as soon as built, reconditioned schools in the inner ring are found too large for present requirements. The tendency therefore is to think of elementary education, particularly at the senior school stage, increasingly in terms of club or communal organization, so that in both inner and outer rings school buildings will be used for a variety of educational and social purposes throughout the week, both during the daytime and the evening, and not be left empty and unused, as in times past, on two days of the week. A notable illustration of this tendency is to be found in the schools or community centres built on the outer fringes of the Nottingham housing estates by the local education authority. An earlier and continuing experiment on similar lines is the village college movement in Cambridgeshire, a new college being opened at Linton in 1937 (*see* VILLAGE COLLEGES AND COMMUNITY SCHOOLS). The Nottingham housing estates schools illustrate a further marked development in elementary education in the liberal provision of playing fields. It is now becoming customary to provide from seven to twelve acres of playing fields for the new senior schools, the buildings of which to-day are far in advance of the secondary schools built under the Education Act of 1902. Of particular interest are the buildings provided by the West Sussex local education committee as an attempt to meet the needs of a shifting child-population.

The reorganization of primary education in accordance with the famous Hadow Report continues, not only in terms of buildings, playing fields, and general amenities, but also in terms of a re-orientation of studies. Though the new national movement for improved physical education (*see* NATIONAL HEALTH AND FITNESS CAMPAIGN; EDUCATION: GENERAL TRENDS) has been the most conspicuous and widely discussed feature of this reorganization, there has been much activity in raising the status and enlarging the scope of craftwork and of the other so-called 'leisure' subjects. To promote this, the Board of Education issued a circular (1453) calling upon local education authorities, universities, and training colleges to make more systematic provision for refresher courses for teachers than is possible under the long established and still valuable vacation courses. The new refresher courses, of not less than three months' duration, tend at present to be confined to the practical and æsthetic subjects. But the problem of the training of teachers, particularly for primary schools and for the work of adolescent education, has been acutely to the fore in more than one direction. The training colleges have for some time experienced increasing difficulty in keeping full to their recognized numbers, so that the authorities of the Church of England were reluctantly constrained to close three women's colleges. The university training departments are also experiencing some difficulty, while on the other hand there has been much agitation on the question of unemployment amongst teachers and particularly amongst graduate teachers. Palliative measures, such as the further reduction of the size of classes, are being slowly adopted, but the right solution of the problem of the supply and demand for trained teachers has not yet been found.

Concurrent with these difficulties is the growing demand for a fresh inquiry into the whole question of the training-college course. Local education authorities, concerned as they are with this question, are not less sensitive to the problem of the right type of special place examination for the selection of boys and girls to pass from primary into secondary schools. The Board of Education issued a brief but significant memorandum on this, and changes in the structure and incidence of such examinations are in progress. A further circular from the Board (1457) illustrates the far-reaching preparations which the coming into operation in 1939 of the Education Act of 1936 necessitates. The circular deals with the problem of beneficial employment of young persons who may be exempted from the additional school year, and indicates ways of increasing co-ordination between education authorities and the juvenile advisory committees of the Ministry of Labour. The 1937 Factories Act limits the working week of boys and girls between the ages of 14 and 16 to 44, and forbids, as a rule, work after 6 p.m. in order to encourage continuation classes.

London County Council]

AFTERNOON REST IN A LONDON COUNTY COUNCIL INFANTS' SCHOOL

Thus, the socialization of education proceeds steadily while the administration of building grants for senior schools under the 1936 Education Act has enabled a concordat to be reached on the long-standing controversy over the appointment of teachers in denominational schools (*see* EDUCATION: MORAL AND RELIGIOUS).

A local dispute at Blackpool was amicably settled largely through the good offices of the Board of Education, and while the new terminology of 'reserved' and 'non-reserved' teachers cannot be expected to endure, there are greater possibilities of peace and co-operation between religious bodies, the local education authorities, and the teaching profession in general than at any time since 1870. Attention and energy are therefore liberated for the elucidation of larger issues, such as vocational guidance, the balance between practical and academic subjects, the right programme for the last year at school, and the relation between this and the first year at work. Empirical methods so successfully employed, *e.g.* by Mr. Valentine Bell at the Battersea Continuation School, need to be supplemented by deeper philosophical and scientific approaches, while for the teacher remains the difficult task of adjusting his personal technique and liberty of 'prophesying' to the not always wholesome mass education and indoctrination brought about by the ever-increasing use of the gramophone, film, and wireless lessons. (A. A. C.)

ELIZABETH (1900–), Queen-Consort of Great Britain and Ireland; youngest daughter of the 14th Earl of Strathmore and Kinghorne, K.G., K.T., born at St. Paul's Waldenbury, Herts, Aug. 4, 1900; married H.M. King George VI (then H.R.H. the Duke of York), April 26, 1923; has two daughters, the Princesses Elizabeth (*b.* 1926) and Margaret Rose (*b.* 1930). On his birthday, three days after his accession to the throne on Dec. 11, 1936, the King conferred on her the Order of the Garter, and in Feb. 1937 she was appointed Dame Grand Cross and Grand Master of the Royal Victorian Order. On May 12, Her Majesty was crowned with the traditional ceremonial, after her husband, in Westminster Abbey, and took part with the King in the celebrations that followed the event, including the drives through London, the State banquets, and the Spithead Naval Review. On July 7, during the royal visit to Edinburgh, Her Majesty's installation as Lady of the Order of the Thistle took place in St. Giles's Cathedral, she being the first woman to be admitted to that historic Order, which had been bestowed on her on May 11. At the end of July, she accompanied the King on his visit to Northern Ireland, and Oct. 16 inspected the London Scottish, of which regiment she is honorary colonel.

EMBASSIES TO AND FROM GREAT BRITAIN: *see* AMBASSADORS AND MINISTERS, GREAT BRITAIN.

EMIGRATION: *see* IMMIGRATION AND EMIGRATION STATISTICS.

ENCYCLOPAEDIAS. The promise made in 1929 that the 36th and final volume of the *Enciclopedia Italiana* would be issued in 1937 was fulfilled in November, when Senator Treccani, founder of the Instituto Giovanni Treccani, under whose auspices it was undertaken and whose generous use of his profits from armament manufacture during the World War had made its inception possible, presented the final volume to Signor Mussolini. In spirit and even in form this great work avowedly took the *Encyclopaedia Britannica* as its model. As a State-aided undertaking, it is a work of which Italy may be justifiably proud; its sumptuous illustrations especially mark an epoch in the history of reference-books.

In Great Britain and America the *Encyclopaedia Britannica* produced a special Coronation issue of the current edition, incorporating among other changes those rendered necessary by the Court events of 1936–37. The present *Book of the Year* is the first of a series of annual supplements to the *Encyclopaedia Britannica.* The great demand for encyclopaedic information in popular form has in the past few years led several British national newspapers to publish encyclopaedias for cheap circulation among their readers; and the demand for an English *Petit Larousse* was met in 1934 by the publication of the comprehensive one-volume *Routledge's Universal Encyclopaedia,* the only entirely new publication of this kind within recent years, issued in New York in 4 vols. as *Facts*: *The New Concise Pictorial Encyclopaedia.* The great *Russian Encyclopaedia,* begun in 1926 under the aegis of the Soviet Union government, is now (1938) about three-quarters complete; though, as in the case of the *Oxford English Dictionary,* whose supplementary volume appeared in 1933, the volumes have not been published in alphabetical sequence. The *Encyclopédie Française,* arranged non-alphabetically, is planned to occupy 21 classified volumes, of which 8 have already appeared. The 21st and final volume of a Hungarian *Nagy Lexikona* was published in 1935, and a concise one-volume *Kis Lexicona* in 1936. An 8-volume Estonian encyclopaedia was published in 1937. In Germany, a new and extensive State-aided encyclopaedia on Nazi lines is in course of publication.

ENDOCRINOLOGY. The last few years have seen an unprecedented advance in our knowledge of the chemical co-ordination of the body, particularly co-ordination by means of hormones. The chief features of recent research have been, firstly, the recognition of the anterior pituitary body, hitherto an organ little understood, as the control centre of the endocrine system; and, secondly, the isolation, characterization, and in some cases partial synthesis, of the substances produced in the glands controlled by the anterior pituitary body. The manifold effects of removal of the pituitary have long been known, but full appreciation of their significance was delayed. Following hypophysectomy (surgical removal of the pituitary body) there are marked changes in the thyroid and adrenal glands, and in the ovaries or testes, as well as in carbohydrate metabolism, blood chemistry, and rate of growth. These effects of hypophysectomy can be wholly or partially abolished by administration of extracts of the anterior pituitary which will stimulate the thyroid and adrenal glands to increased physiological activity. Not only is the internal secretion of the gonads stimulated, but also the maturation of ova and spermatozoa. It is customary to refer to these various activities of the anterior pituitary as thyrotrophic, adrenotrophic, and gonadotrophic. The gonadotrophic effect is probably brought about by more than one substance—by as many as three according to certain authors. Similarly, extracts can be made of the anterior pituitary body which will restore growth in the hypophysectomized animal, or increase the growth of the immature animal. The effect on carbohydrate metabolism is shown by the capacity of extracts of the anterior pituitary to raise the blood sugar and to decrease the sensitivity of the animal to insulin. In certain cases, the full diabetogenic effect—namely excretion of sugar and ketones in the urine—may be observed. The pituitary substances responsible for these manifold effects have not yet been isolated or identified, but they are undoubtedly protein-like in nature, and their chemical properties contrast strongly with those of the hormones secreted by the adrenals and gonads. Thus, they are destroyed by heat in the presence of water; they are insoluble in organic fat solvents, but soluble in water; and they are stable in mild acids and alkalis. The adrenotrophic, thyrotrophic, and gonadotrophic hormones are distinguished by the fact that they act upon a second gland, which is thereby stimulated to secrete hormones to effect the characteristic changes in the end-organ. Another pituitary hormone, however, whose existence is well established, acts directly upon the end-organ. This is the hormone responsible for causing the secretion of milk by the mammary gland, and in pigeons for the thickening of the epithelial crop lining responsible for the production of pigeon's ' milk '.

Adrenal Cortex.—It has been established for some time that removal of the adrenals is incompatible with continued survival of the animal, and, further, that this lethal effect is due, not to the removal of the adrenalin-bearing medulla, but to the removal of the cortex of the gland. The symptoms preceding death caused by adrenalectomy seemed to be due largely, if not exclusively, to the disturbance of the metabolism of salt and water. The lethal action of adrenalectomy is so definite that extracts of the cortex can be tested biologically for their power to promote survival, but the minute amounts of active substance present in the gland have made the concentration and purification of extracts a laborious affair. Nevertheless, among the large number of crystalline compounds separated from cortical extracts by Reichstein, there seems to be at least one which has the full survival-promoting power of cortical extracts. It is certain that the constitution of this substance, corticosterone, will shortly be ascertained, and already a semi-synthetic product, having one-third of its biological activity, has been produced from the hormone of the corpus luteum (see below). Recent research on the adrenals has also led to the discovery that they contain relatively large amounts of substances similar in biological activity to the gonadal hormones, and this provides a link with the clinical observation that tumours of the adrenal cortex may lead to the appearance of masculinity in women and femininity in men.

Testis.—The well-known effects of castration indicate that the testis has a vital influence upon the accessory male organs of reproduction and upon secondary sexual and other bodily characters. Only recently, however, have extracts of testis been prepared capable of replacing in the castrated animal the endocrine activity of the intact organ. Koch and Gallagher were able to produce from bull testis a concentrated extract capable of causing growth of the atrophic comb of the castrated cock or capon, the most convenient test available. They were subsequently able to elaborate a number of tests on the castrated rat and to effect a quantitative standardization of extracts. The proportion of active material present in the tissue was again minute, and not until 1935 was the essential hormone of the testis, now known as testosterone, isolated from testis extracts by Laqueur and his co-workers and chemically characterized. In the meantime, Butenandt, working on the discovery that extracts with similar activity could be prepared from male urine, had produced from that source a crystalline substance with biological properties similar to those shown by testis extracts. The name androsterone was applied to this substance, since at that time it was supposed to be the essential male hormone. The chemical constitution suggested for this substance by Butenandt was confirmed by Ruzicka in the course of a brilliant piece of work, in which androsterone was prepared artificially from cholesterol. A somewhat similar technique was subsequently used for the artificial preparation of testosterone from cholesterol, and what appears to be the essential hormone of the testis is now available in large quantities. Both androsterone and testosterone are *cyclo*pentenophenanthrene derivatives. Androsterone is fully saturated, and has a hydroxyl group in position 3 and a keto group in position 17. Testosterone has one double bond (Δ^4), and is a 3-keto, 17-hydroxy compound.

Ovary.—The early work of Allen and Doisy on the preparation of ovarian extracts was followed by Zondek and Aschheim's discovery that highly active extracts with similar biological properties could be prepared from the urine of pregnant women, and for a time the centre of interest shifted from the ovary. The high concentration and the comparative lack of inert material in pregnancy urine made possible a rapid advance in chemical methods of preparing active extracts, and in a short time two active substances had been isolated. These are now known as oestrone and oestriol. They are of somewhat similar constitution to the male hormone described above, but they contain a phenolic ring and their artificial production has not yet been achieved. These substances were commonly supposed to represent the essential female hormone as it was actually secreted by the ovary, but further research by Doisy and his co-workers resulted in the isolation, from sows' ovaries, of a third substance now known as oestradiol. This substance, which is considerably more active than oestrone, had already been produced artificially by the partial hydrogenation of oestrone, but the claim of the chemist to have improved on nature was short-lived in view of oestradiol's ultimate isolation from the ovary. The substances described are responsible for only one phase of the female reproductive cycle, namely, for the changes associated with the time of maturation and ovulation of the Graafian follicle in the ovary. The second and no less important phase of the cycle comes after ovulation, when the corpus luteum develops from the shell of the ruptured follicle, and the uterus undergoes coincidental changes designed to facilitate the implantation of the fertilized egg. This second phase of the cycle was thought, from the evidence of functional correlation, to be under the control of a hormone produced by the corpus luteum, and experiments resulted in the production of extracts capable of inducing in the immature or ovariectomized animal suitably sensitized with oestrone the usual post-ovulation changes of the accessory organs. Small amounts of crystalline hormone were eventually produced from corpora lutea and its chemical characterization was effected. The name progesterone was agreed upon by the various workers concerned. The artificial production of this rare substance was afterwards achieved from stigmasterol—a steroid related to cholesterol —found in soya bean oil. Unlike the male and female hormones, progesterone does not seem to be excreted in the urine in an active form, but an inactive compound—pregnanediol—previously isolated from pregnancy urine, has now been recognized as the probable excretion product of the hormone of the corpus luteum. This substance can be obtained in fair quantity from urine, and can be converted back to the active progesterone by a comparatively simple process.

Integration of the Endocrine System.—It is clear that the primary regulation of the system is due to the stimulating activity of the anterior pituitary body. It is equally evident that certain of the organs directly or indirectly controlled, particularly the ovary and uterus, must be able to exert an effect in their turn upon the anterior pituitary. Thus the implantation of a fertilized egg in the uterine endometrium is by some means effective in causing the persistence of the corpus luteum in the ovary, and this change in the ovary interrupts the pituitary cycle so as to bring about the endocrine conditions necessary for successful gestation. In the same way, inter-relationships exist, possibly directly, between the thyroids, adrenals, and gonads.

(A. S. Pa.)

ENGINEERING. For articles on engineering subjects *see* Aeronautics; Air Conditioning; Bridges; Canals and Inland Waterways; Canning Industry; Dams; Electrical Engineering, *et seq.*; Gas; Iron and Steel; Machinery and Machine Tools; Motor Cars, *et seq.*; Public Health Engineering; Radio; Refrigeration and Household Refrigerators; Shipbuilding; Telegraphy; Television; Tunnels; Water Power; Water Supplies.

ENGLAND: *see* Great Britain and Northern Ireland, United Kingdom of.

ENGLISH LITERATURE. Any survey of English literature during 1937 should, before anything else, mention some of those writers who died during the year. They include Sir James Barrie, John Drinkwater, Joseph Hocking, and Lieut.-Col. Cyril McNeile (more recognizable under his *nom de plume* of 'Sapper'). Short obituary notices of these may be found under their respective headings in this volume. Another, though not so direct a loss to English literature, was caused by the death of its great interpreter to the French, Professor Émile Legouis (*q.v.*).

A notable little group of books is made up, entirely or in part, of the posthumously published work of three great authors who died before the beginning of the year under review. Kipling's autobiographical *Something of Myself: For my Friends, Known and Unknown* was most accurately entitled by its author: 'Something' is the operative word, yet enough is here to bring a measure of satisfaction to any but the most unilateral admirers of this many-sided genius. A few more poems to add to the published output of A. E. Housman are included in Laurence Housman's *A. E. H.*—not, as was in the nature of things, of the same water as the poems of the two famous volumes, but still precious enough. This book also contains some valuable letters by 'A. E. H.' As to G. K. Chesterton's *The Paradoxes of Mr. Pond,* it is, perhaps, permissible to express a sense of thankfulness that his reputation stood in no need of enhancement by this last of his books; yet how gladly would we read many more such.

Before attempting anything in the nature of a systematic review of the various types of literature, one special type evoked by the Coronation and its antecedent circumstances may be noticed. It is a little incongruous that the most noteworthy of the books begotten of the Coronation should owe its inclusion in this survey to its translation from the German by L. G. Wickham Legg; but it is generally acknowledged that Dr. P. E. Schramm's *History of the English Coronation* was bettered by no native Englishman's book upon the subject, though there is evidence of documentary research in J. G. Noppen's *Royal Westminster,* and Hector Bolitho's biographies of *Edward VIII* and *George VI* may be mentioned here. The centenary of Queen Victoria's accession had also its own literature, among which Margaret Lambert's *When Victoria Began to Reign* may be singled out.

In no survey of English literature in these days can pride of place be given to poetry. There are still, and it is to be hoped that there will always be, poets and experimenters in verse forms; but they occupy the attention of only a fraction of the reading public. The stream of fiction, good, bad, and indifferent, continues in full flood; but it is the large and varied output of works of biography, reminiscence, and travel that is most characteristic of the country's literature.

Of the considerable number of autobiographies published during the year, Kipling's has already been mentioned. A word or two should be written of Barrie's *The Greenwood Hat.* Much of this little book is autobiographical, sharing with the reader, pleasantly but all too briefly, its author's reminiscences. Filial piety, together with personal recollections of middle-class life in late Victorian London, are finely embodied in Herbert Asquith's *Moments of Memory*; and in *As I Was Going Down Sackville Street,* Oliver St. John Gogarty produced a work on a high plane of scholarship. Bernard Shaw's early career as a music critic was recalled by his memories of *London Music in 1888–9.* Among other memorable books of personal reminiscences were Laurence Housman's *The Unexpected Years,* Sir Ronald Storrs' *Orientations,* Lady Wilson's *Dear Youth, My Fill of Days* by Sir Peter Chalmers Mitchell, *Georgian Adventure* by Douglas Jerrold, the Duke of Portland's most readable *Men, Women, and Things,* and J. B. Booth's *A Pink 'Un Remembers,* which must bring a sigh of regret from those who were in their prime vigour in the London of the opening years of the present century. It is, indeed, difficult to know where to stop in recalling the year's contributors in this class of literature, for they included, among others, H. A. Vachell, S. P. B. Mais, and Noel Coward. Two remarkable books which, though not autobiographies, are based on their authors' personal reminiscences are Harold Nicolson's life of Lord Dufferin, *Helen's Tower,* and V. Sackville-West's *Pepita,* a life of her mother and grandmother which proves yet again that 'Truth is stranger than fiction'. More directly autobiographical are Jack Jones's *Unfinished Journey,* G. A. W. Tomlinson's *Coal Miner,* and Andrew Smith's *I Was a Soviet Worker,* all of which, written by working men, have considerable literary as well as sociological value. Another book which may well be mentioned here is *Coming, Sir !,* in which its author, Dave Marlowe, relates his experiences as a waiter.

One of the great figures of the year, Lord Baldwin, found a biographer in Arthur Bryant. There was, also, an interesting group of biographies of men who are still within living memory. Prominent among these are Professor G. M. Trevelyan's peacefully and nobly written *Grey of Fallodon, T. E. Lawrence, by his Friends,* and Sir Frederick Maurice's minutely thorough first volume of his *Haldane.* Winston Churchill's *Great Contemporaries* has that quality of brilliance which is expected from its author, and a stirring story is told in Frank O'Connor's life of Michael Collins, *The Big Fellow.* Labours of love were faithfully performed by John Eglinton in *A Memoir of A. E.* and by M. Tschiffely in *Don Roberto,* a portrait of R. B. Cunninghame Graham; and here it is right to call attention once more to Laurence Housman's *A. E. H.* Monsignor O'Connor's *Father Brown on Chesterton* not only provided interesting new glimpses of G. K. Chesterton as a man and as a writer, but revealed how a personal friendship inspired him to create his famous clerical detective. Although the book is not strictly a biography, it is permissible to mention here Humphrey House's editing of *The Notebooks and Papers of Gerard Manley Hopkins* and *Some War Diaries, Addresses and Correspondence,* being Lord Ypres' papers edited by his son, Major Gerald French.

There was a very large number of biographies of characters belonging to the more distant past, among them *John Knox* by Lord Eustace Percy, Algernon Cecil's *A Portrait of Thomas More,* Cyril Hughes Hartmann's *Clifford of the Cabal,* Compton Mackenzie's *Pericles,* A. L. Rowse's *Sir Richard Grenville of the Revenge,* Sir Charles Petrie's strongly written *Bolingbroke,* R. Gore-Browne's *Lord Bothwell,* and D. M. Low's *Edward Gibbon.* An interesting, if fortuitous, occurrence was the publication in the same year of Maurice Ashley's *Oliver Cromwell, The Conservative Dictator,* and of *King Charles and the Conspirators,* by Esmé Wingfield-Stratford. The first Roman emperor was the subject of two historical studies: *Augustus* by John Buchan, and G. P. Baker's *Augustus, 'The Golden Age of Rome'.* Dr. A. B. Harrison's Elizabethan scholarship was seen in his *Life and Death of Robert Devereux, Earl of Essex.*

Biography and history shade into each other in *The Amberley Papers : The Letters and Diaries of Lord and Lady Amberley,* edited by Bertrand and Patricia Russell. This book may not have a very wide appeal, but it is of immense interest to the student of the psychological tendencies at work during the '50's and '60's of the last century. Equally interesting on a rather different spiritual plane is Dilys Powell's translation of *The Private Letters of Princess Lieven to Prince Metternich, 1820–1826.* A delightful contribution to our knowledge of seventeenth-century England is made by Gladys Scott Thomson's *Life in a Noble Household,* in which the first Duke of Bedford and his family come to life again through their domestic accounts.

It is impossible to leave biography without reference to the publication of another supplementary volume to the *Dictionary of National Biography.* This, which includes those who died in the period 1922–30, is particularly rich in its material.

This is, perhaps, the most appropriate point at which to turn to purely historical and political works; and, taking first some books of contemporary interest, we find Capt. B. H. Liddell Hart analysing with acumen a situation aptly described by his title *Europe in Arms.* Born of Spain's misfortunes are Professor E. Allison Peers's *Catalonia*

Infelix and Martin Armstrong's *Spanish Circus*. But it would be too invidious a task to attempt a selection from the group of books concerned with the rival political ideologies so much before the public mind at the present time; and for this very reason there is all the more cause to refer to Lionel Curtis's brave attempt, in the final volume of *Civitas Dei*, to suggest what things ought to be but are not.

R. W. Seton Watson's *Britain in Europe—A Survey of Foreign Policy* covers a wider stretch of time, as does *A Hundred Years of English Government* by K. B. Smellie; and, as histories of past periods, there were Dr. Prévité-Orton's *History of Europe, 1198–1378*, the *Early Stuarts* volume of the Oxford History of England, and Geoffrey Baskerville's *English Monks and the Suppression of the Monasteries*. This last is a most interesting account of what happened to the monks after their monasteries had been dissolved.

It is appropriate that Coronation year should have seen the publication of many books dealing with various aspects of the British Empire, such as *The British Empire: A Report on its Structure and Problems*, compiled by members of the Royal Institute of International Affairs, Eris O'Brien's *The Foundation of Australia*, a history of the foundation of New Zealand by Eric Ramsden under the title *Marsden and the Mission: Prelude to Waitangi*, and, to continue the list of the self-governing Dominions, Professor Eric Walker's biography of *W. P. Schreiner*.

If one may judge by their number, books of travel seem to be hardly less popular with present-day readers than are novels and biographies. The number of such books published in 1937 was truly amazing, and the task of selecting a very few of them is no grateful one; but with the memory of Peter Fleming's 1936 book so fresh in the mind, one would naturally think first of *Forbidden Journey*, in which Miss Ella Maillart, Mr. Fleming's companion on that incredible journey through the Koko-nor and Sin-kiang to India, tells the same story in a manner which many judges have proclaimed to be superior to that of her forerunner. Another famous woman traveller, Miss Freya Stark, produced, not a story, but a series of brilliantly vivid *Baghdad Sketches*. A gay and colourful *Road to Oxiana* is travelled with Robert Byron. The tragedy of its subject inevitably permeates Miss Kate O'Brien's cry of a sorrowing exile, *Farewell to Spain*. The lure of central and eastern Asia is, for one reason or another, responsible for A. G. Hamilton's *Road Through Kurdistan*, Quaritch Wales's *Towards Angkor*, and Sir Eric Teichman's account of his famous political mission in *Journey to Turkistan*. Edward Shackleton had no need to strain after the sensational in his simply told *Arctic Journeys*; and other records of high adventure were Hugh Ruttledge's *Everest: The Unfinished Adventure*. F. S. Smythe's *Camp Six: An Account of the 1933 Mount Everest Expedition*, and *Snow on the Equator*, by H. W. Tilman, leader of the 1938 Everest expedition. The tragic diary of young Edgar Christian, published posthumously under the title of *Unflinching*, and the story of the Oxford University Arctic expedition of 1935–36 related by A. R. Glen, leader of the expedition, were other interesting contributions to the literature of polar exploration. A travel book of a very different and peaceful character, Sir Austen Chamberlain's *Seen in Passing* is a pleasant fruit of its author's moments of relaxation.

First place has been given here to works of biography and history, politics and travel, because it seems that it was in such that English literature was richest during 1937. But to the vast majority of readers, literature means fiction; and, whatever may be thought of their quality, there was no noticeable falling off in the number of novels published during the year. It is notoriously impossible to foretell which novels will win an enduring place in literature: it is more than doubtful whether as many as one in each year can hope to do so. All that can be done is to point to the work of well-established novelists, and to that of less firmly established or new writers which has been favourably noticed by the reviewers. One of the most successful novels of the year was Francis Brett Young's *They Seek a Country*, and another was Dr. A. J. Cronin's onslaught upon the modern medicine-man in his less laudable manifestations, *The Citadel*, written with obvious sincerity tempered by the necessary degree of artistic restraint. John Masefield published *The Square Peg*. Storm Jameson's *The Moon is Making* is less derivative than the greater part of nearly all novelists' work. Those who like a rousing sea-story were well served by H. M. Tomlinson with his *All Hands*. H. G. Wells has been as prolific as ever, and the many who find more to delight them in his early than in his later work will have been gratefully surprised to find something, at least, of the old spirit recaptured in *Brynhild* and *Star-Begotten*. Others of the old brigade who served their public faithfully were Sir Hugh Walpole with his fairy tale, *John Cornelius*, Compton Mackenzie with two huge instalments of *The Four Winds of Love*, Frank Swinnerton with *Harvest Comedy*, H. A. Vachell with *The Golden House*, Somerset Maugham with *Theatre*, Gilbert Frankau with *The Dangerous Years*, Robert Hichens with *Daniel Airlie*, Eden Phillpotts with *Farce in Three Acts*, Michael Sadleir with *These Foolish Things*, and Richard Aldington with *Very Heaven*; and this is very far from exhausting the list of established favourites.

The Years, by Mrs. Virginia Woolf, was one of the 1937 successes: its outlines lack something in definition, but it has much of the stuff that dreams are made on. In a year in which divorce was in the foreground of discussion, Miss E. M. Delafield's *Nothing is Safe* came appropriately enough with its reminder, if such were necessary, that there may be other parties concerned, younger and even more vulnerable than the most patently innocent principal. Miss Helen Simpson's *Under Capricorn* belongs, properly speaking, to Australian literature. Mrs. Beatrice Kean Seymour published *The Happier Eden*. There was originality and vividness in Miss Margaret Lane's *At Last the Island*.

Some of the best of the year's historical novels were written by women, among them *No Hearts to Break* by Miss Susan Ertz, *Winged Pharaoh* by Miss Joan Grant, and Mrs. Hicks Beach's *A Cardinal of the Medici*. Other romances in this category include David Pilgrim's *So Great a Man*, with Napoleon for its theme, *And so—Victoria* by Vaughan Wilkins, and *The Lost King* by Rafael Sabatini. Further illumination of the nineteenth-century scene was provided by Laurence Housman in *The Golden Sovereign: More Plays of Queen Victoria and her Times*.

All those to whom A. Neil Lyons's *Arthur's* has been a classic for some thirty years must have been overjoyed to find him reproducing so much of the genius of that immortal collection in *Tom, Dick, and Harriet*. This was one of the most remarkable 'come-backs' of a year which had also its due share of successful new-comers. *The Wild Goose Chase* by Rex Warner, and Geoffrey Household's *The Third Hour* were first novels in which critics discerned a more than ephemeral promise; and there were other books whose authors can be congratulated upon a successful first plunge into the treacherous seas of fiction: Olivia Manning's *The Wind Changes*, C. P. Rodocanachi's *No*

Innocent Abroad, Frances Harris's *Fain Would I Change*, and Fanny Jocelyn's *And the Stars Laughed*, are little more than a random choice, the justice of which may well be outweighed by the injustices of its omissions.

The standard of detective fiction, considering the colossal output in this kind, remained at a surprisingly high level. In *Clunk's Claimant* H. C. Bailey won yet more of the reader's reluctant admiration for his less reputable hero, even though he dared, in this book, to bring Mr. Clunk face to face with Reggie Fortune himself. Mrs. Agatha Christie published two books, *Death on the Nile* and *Dumb Witness*, and Miss Dorothy L. Sayers, *Busman's Holiday* (familiar also in its dramatized version).

E. J. O'Brien brought out a collection of *The Best Short Stories of 1937*; and another volume in this kind of literature was Alec Waugh's *Eight Short Stories*.

These are lean years for poetry in English literature, and the year under review is no exception. Many will think that the handful of final gleanings from A. E. Housman's previously unpublished work was poetically at least the equal of any other work published during the year. Nothing came from the pen of W. B. Yeats, the one indisputably major poet remaining with us. But much was done to rescue the year from utter mediocrity by the poet laureate, for the poetry of true patriotism, well attuned to public thought in a year of national emotion, informs the forty-two poems of Mr. Masefield's *The Country Scene*. W. H. Auden was awarded the King's Gold Medal for poetry. His most interesting and most successful publication during the year was written in collaboration with Louis MacNeice, and is by no means exclusively poetical; for *Letters from Iceland* is a medley of all sorts of writing, for the most part satirical without being too splenetic. Mr. Auden also published a poem, *Spain*, in which his political sympathies have not entirely extinguished the poet. Two volumes of *Collected Poems* appeared during the year: one, under that title, by Laurence Housman, and John Drinkwater's *Collected Poems, Volume III*. Richard Aldington put at least some genuine poetry into his *The Crystal World*. Two frankly communist young poets, Charles Madge and Rex Warner, the former in *The Disappearing Castle* and the latter in *Poems*, showed that they are at times not incapable of poetical thought and expression. *Straight or Curly?* by Clifford Dyment was welcome to ears attuned to an older convention of verse form. A new writer who, though far more than a mere inheritor of the past, is less likely than many of her contemporaries to furrow the brow of perplexed old age, is Miss Elizabeth Belloc, whose *Poems* have a fresh and simple certainty of touch. Returning to the work of well-established writers, we have Edmund Blunden's *An Elegy*, and Humbert Wolfe's vitriolic *Don J. Ewan*.

Verse translation was very fairly represented by R. C. Trevelyan's *Lucretius*, and Arthur Waley's *The Book of Songs*, a selection of ancient Chinese lyrics.

In belles-lettres and criticism there was during the year a wide range, if the total quantity was not great. Works of general poetic criticism included D. G. James's *Scepticism and Poetry*, Rostrevor Hamilton's *Poetry and Contemplation*, and *Illusion and Reality* by 'Christopher Caudwell'—a *nom de plume* which veils the identity of Christopher St. John Sprigg, who died during the year fighting for the government cause in Spain. Further light has been shed upon the lives of one or two of the great writers of the past, and this is especially true of Keats; for there were published during the year not only F. Edgcumbe's editing of *The Letters of Fanny Brawne to Fanny Keats*, but also Marie Adami's *Fanny Keats*. The former of these books did anything that was still needed to dispel the old misconceptions concerning Fanny Brawne. In addition, there were Townsend Scudder's *The Lonely Wayfaring Man*, a study of Emerson, the further instalment of E. de Selincourt's edition of *Wordsworth Letters*, James Sutherland's *Defoe*, and finally, once again, Laurence Housman's *A. E. H.* Edward Garnett provided an introductory essay to his *Conrad's Prefaces to his Works*; and volumes of essays were produced by G. M. Young in *Daylight and Champaign*, by E. V. Lucas in *All of a Piece*, and by Lord Hewart in *Not Without Prejudice*.

A consideration of the literature of science brings immediately to mind the loss sustained by the death of Lord Rutherford (*q.v.*), whose book *The Newer Alchemy* records the seemingly incredible in a tellingly matter-of-fact manner. Sir James Jeans, with *Science and Music*, filled in another section of the disappearing ditch that divides science from human and artistic realities. Six of the addresses delivered at the meeting of the British Association at Blackpool were collected in book form under the title *What Science Stands For*, the authors being Sir John Orr, Prof. A. V. Hill, Prof. J. C. Philip, Sir Richard Gregory, Sir Daniel Hall, and Prof. Lancelot Hogben; and no more convenient form could be desired by the inquiring layman who wants to know what, in fact, science does stand for. Sir James Frazer published *Totemica*, a supplement to his earlier book, *Totemism and Exogamy*. With *Pasha the Pom*, written in collaboration with Lady Frazer, Sir James joined the ranks of scientific men who have published books for children.

Any classification of books is bound to achieve but moderate success in its attempt to put them into classes. Apart from inevitable misplacement of border-line cases, there are bound to be some books which are best not classified at all. The Bible is a notable example. This, we are told, is a constant best-seller; but in 1937 interest in this unique collection of books was further stimulated by its publication in a new and classified form as *The Bible Designed to be Read as Literature*. Not all readers will have been pleased to find the Revised substituted for the Authorized Version in some of the poetical books, particularly Job, Ecclesiastes, and the Song of Songs, and some might have preferred the Prayer Book version of the Psalms to that of King James's Bible; but for many this book must have revealed unsuspected treasures which had been, for them, buried beneath an appearance grown too conventional.

(J. D. C.)

ENGRAVING: *see* Etching and Engraving.

ENTOMOLOGY. Nearly 500,000 species of insects are now known and hundreds of thousands of additional species are yet to be discovered. These tiny creatures are found in all countries, under all variety of climatic conditions from the tropics to the arctic zones. Some attack man directly, others transmit the organisms of human diseases, while many attack all kinds of fruits, grains, forage crops, stored foods, and even the dwellings man constructs for his shelter.

The following brief discussion is intended to give a general view of some of the principal points at which these tiny, virile creatures impinged on the lives and activities of men during the year 1937.

World-wide Injurious Insects of the Past Year.—Many species of insects have been distributed through the activities of commerce around the world. Through their ability to adapt themselves to all sorts of conditions, they have become established in many countries, have multiplied enormously and have become very injurious. The common cotton bollworm moth, *Heliothis* (*armigera*) *obsoleta*, is found from the East Indies and Australia to Japan, India, Europe, and North and South America. The larva attacks cotton, maize, tomatoes, tobacco, and many other plants. It is always injurious, and in the past year was markedly so in certain cotton-producing countries of the world. Another small, dark, greyish-brown moth, *Pectinophora gossypiella*, is present throughout cotton-growing countries, Egypt, India, Africa, Brazil, Mexico, and in portions of the south-western United States. Its larva, the pink cotton bollworm (weevil) attacks the flowers and bolls of the cotton plant and during the past year it was actively injurious.

The armyworm, *Cirphis unipuncta*, is also cosmopolitan, for it occurs in Australia, New Zealand, China, India, Europe, and in South and North America. The greenish-striped caterpillars often become enormously abundant, and march gregariously over the ground in search of fresh food—corn, oats, barley, and other grains and grasses. Outbreaks of the insect, especially in the United States, occurred in 1937. The San José scale, *Anoidiella* (*Aspidiotus*) *perniciosus*, a native insect of China, has spread around the world, and has proved to be a most pernicious enemy of the peach, plum, pear, currant, and apple. It was a serious pest to the foregoing fruits in many localities during the year under review.

The corn (maize) borer, *Pyrausta nubilalis*, ranges from Guam and the Philippines to Japan, through all Asia, central and southern Europe and northern Africa to North America. It attacks corn, millet, sorghum, hemp, hops, and other plants. It was active during the year in Japan and China, and persistently extended its territory and injuries in the United States and Canada. The gipsy moth, *Porthetria dispar*, present throughout Europe, western Asia, northern Africa, and quite certainly in Japan and China, periodically defoliates large areas of deciduous trees in Europe, and in 1937 caused severe defoliation in the north-eastern United States.

Termites, distributed around the world in tropical and temperate regions, have been destructive to ties, mine props, telephone and telegraph poles, bridges and wooden structures of all kinds, especially the dwelling-houses of man. *Reticulitermes flavipes*, in the eastern United States and in certain regions along the Mediterranean, *R. Hesperus* and *R. tibialis* in the western United States, and other species in Central and South America, in South Africa, and in Asia have been increasingly destructive.

Notable Fruit Insects of the Year.—All fruits are subject to the attacks of insects. A list of 275 species of insects attacking the vine has been compiled. The apple serves as host to several hundred species of insects, although not all are injurious. That serious enemy of fruits, the San José scale, has already been mentioned.

The grape phylloxera, *Phylloxera* (*vastatrix*) *vitifoliae*, a member of the family of aphids or plant lice, is of nearly world-wide distribution. It is, undoubtedly, a native parasite of the wild grape of the United States. It is especially destructive to the European type of grape. French authorities have spoken of its introduction into France as follows: 'Le désastre phylloxérique fut sans précédent dans les annales du monde agricole'. It attacked the grape to some extent in Europe and in California (U.S.A.) during the past year.

The red scale, *Aonidiella aurantii*, has become distributed throughout the tropical and semi-tropical regions of the world, and in many regions, especially in South Africa and the western United States, constituted one of the chief troubles of the grower of citrus fruits of the year. The codling moth, *Carpocapsa pomonella*, a major pest of apples, is found in all the apple regions of the world. The larva, which also attacks the pear, quince, and English or Persian walnut, took its annual toll during the year in South Africa, the United States, and Canada, and was severe in England.

The flies of the family *Trypetidae*, known as fruit-flies, are cosmopolitan, and among the worst pests of fruits in many countries. The Mediterranean fruit-fly, *Ceratitis capitata*, is present on every continent except North America, although it occurs in nearby Bermuda. It caused serious injury in various parts of its range to a wide variety of fruits, especially citrus fruits, peaches, apricots, and figs. The olive fly, *Dacus oleae*, is also a most injurious species. In Italy and Spain it caused great losses to the olive industry.

In the United States, the apple maggot, *Rhagoletis pomonella*, and the cherry maggots, *R. cingulata* and *R. fausta*, were the important members of the fruit-fly group during the year. The Mexican fruit-fly, *Anastrepha ludens*, which attacks grapefruit and oranges and other fruits, has entered the lower Rio Grande valley in the United States.

Locusts or Grasshoppers.—Among the greatest insect scourges of all time have been the enormous swarms of locusts sweeping across vast areas, and destroying all vegetation in their paths. In parts of Russia, western Asia, Egyptian Sudan, South Africa, Argentina, and the west-central United States and in portions of Canada, locusts are, at the present day, among the most destructive insects with which the people have to contend. The chief migratory locusts of the Old World comprise two species, *Locusta migratoria* and *Locustana pardalina*. The former occurs from western Europe eastward through Asia and northern and central Africa to the Philippines. Serious trouble from it occurs somewhere in this vast area every year.

In South Africa there are four species of migratory locusts, the brown locust, *Locustana pardalina*, the red locust, *Nomadacris septemfasciata*, the tropical migratory locust, *Locusta migratoria migratoriodes*, and the desert locust, *Schistocerca gregaria*, which once constituted one of the Biblical plagues of Egypt. Even to-day it swarms and devastates crops in north and east Africa and Asia Minor. Both the brown and red locusts were destructive in South Africa in 1934, 1935, and 1936, and an outbreak of the red locust was expected in 1937.

In parts of United States and Canada, grasshoppers were destructive during 1936, and, on the whole, were worse in 1937. Four species were concerned in the States of North and South Dakota, Nebraska, Kansas, and some neighbouring States. These were the lesser migratory locust, *Melanoplus mexicana*, the differential grasshopper, *Melanoplus differentialis*, the two-striped grasshopper, *Melanoplus bivittatus*, and the red-legged locust, *Melanoplus femurrubrum*.

Chief Stored-grain Insects.—The many species of insect infesting stored grains and dried foods have been carried around the world with the materials in which they live. They were active everywhere, and caused great losses during the year. The saw-toothed grain beetle, *Oryzaephilus surinamensis*, reddish-brown and about 2·5mm. ($\frac{1}{10}$in.) in length, has spread over the earth. It infests meal, flour, breakfast cereals, and occasionally corn-starch, ginger, macaroni, and dried fruits.

The pinkish-white larvae of the Mediterranean flour moth, *Ephestia kushniella*, infest flour mills, and often find their way into houses in packages of flour and cereals. The cosmopolitan Indian meal-moth, *Plodia interpunctella,* feeds on grains of all kinds, and often invades households in oatmeal, certain biscuits, raisins, dried currants, apples and peaches, and in other fruits. The fig moth, *Ephestia cautella,* infests dried figs throughout the world.

The granary weevil, *Sitophilus granaria,* and the rice weevil, *Sitophilus oryzae,* two tiny blackish beetles, are among the most destructive insects in the world. They are cosmopolitan, and are injurious to stored wheat, maize, barley, rice, and other grains. They often enter households in packages of cereals.

Insect Carriers of the Organisms of Human Diseases.—Within the last few decades, remarkable discoveries have been made regarding the intimate relation of certain insects to some of the most virulent diseases of mankind.

Malaria, the most universal and devastating disease of mankind, is disseminated by various mosquitoes of the genus *Anopheles. A. maculipennis, A. ludlowii, A. quadrimaculatus,* and *A. albimanus* may be considered the chief world offenders in perpetuating malaria. Thousands, indeed millions of people in the Philippines, India, southern Europe, South and Central America, and the southern United States suffered from this disease during the year, and a certain proportion of them died from the attacks.

In the eastern United States there appeared during the year a veritable epidemic of the common dog flea. This flea is not greatly to be feared, although it may infect children with an intestinal tapeworm. It is the rat flea, *Xenopsylla cheopsis,* that man needs to fear, for it is a carrier of *Bacillus pestis,* the cause of plague, one of the great scourges of mankind. China experienced an outbreak of the plague during the early stages of the Sino-Japanese war.

The housefly is the greatest insect distributor of germs. It carries the organisms of typhoid fever, dysentery, and cholera, and, undoubtedly, was responsible for much illness and many deaths during the year. Typhus fever, which takes its annual toll of human lives among the poor, half-starved peasants of south-eastern Europe and of Russia, is transmitted through the agency of the body and head lice of man.

Yellow fever, carried by the tiny mosquito, *Aedes aegypti,* although banished from North America, still rages in portions of central and west Africa.

Insects as Destroyers of their Own Kind.—It is an interesting fact that man has domesticated but two insects out of the existing thousands of species—the docile, harmless silkworm, and the fiery honeybee. The lac insect, *Tachardia lacca,* not strictly domesticated, is reared on a large scale in India.

Investigation has shown that nearly, if not quite all, insects are preyed upon by members of their own tribe and kind. Hundreds, indeed thousands, of species of tiny wasp-like parasites are constant and deadly enemies of larger insects. Many predacious beetles, dragon-flies, robber-flies, and other tigerish forms are ever hunting out and devouring their kind.

Man has taken advantage of his knowledge regarding the destructive work of these parasitic and predacious forms and is slowly learning how to propagate them in quantity and to distribute them where they will attack and destroy the pests which are ravaging his crops. This work in the utilization of insects as destroyers of their own kind has been carried on during 1937 more methodically, intensively, and intelligently than ever before, in Canada, the United States, England, France, Italy, and Germany. (*See* MALARIA.)

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(G. W. HE.)

EPIDEMIOLOGY AND INFECTIOUS DISEASES. The year 1937 was marked by two epidemiological events in England and Wales which have been the subject of a good deal of comment. An outbreak of typhoid fever at Croydon, on the fringe of London, has received special public notice. Less dramatic, but perhaps more interesting from an epidemiological point of view, has been a steady and rather rapid increase of dysentery. These two occurrences are dealt with below under the appropriate headings.

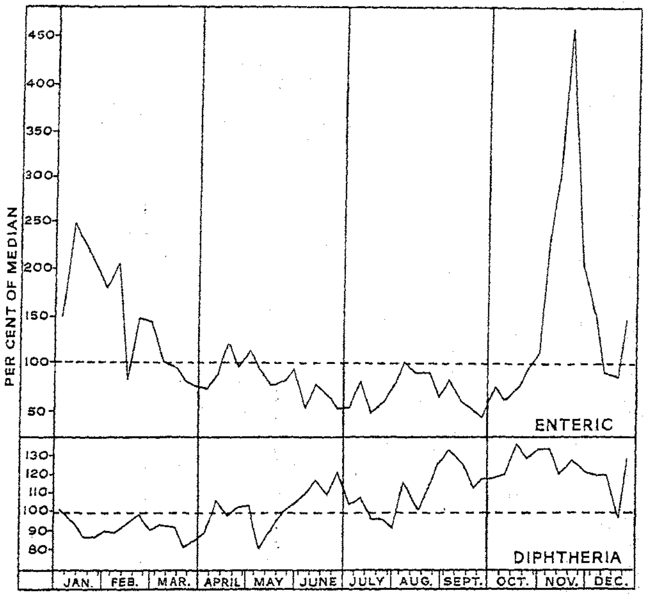
The incidence of certain diseases is indicated by the returns of notifications published weekly by the registrar-general. The table overleaf summarizes the records of a period of 52 weeks and compares them with the numbers for the calendar year 1936.

In discussing these figures, reference will be made to some epidemiological observations in other parts of the world.

Smallpox.—During the past three years Great Britain may be said to have been free from smallpox as an endemic disease. Two of the cases which occurred at the beginning of the year were associated with a small outbreak in Oldham during Dec. 1936, suspected to have been due to infection from imported raw cotton. Two cases were notified at Ripley in Derbyshire in March, the source of infection apparently being untraced, and a further case occurred in Hyde, Cheshire, during November. This last appears to have been of the virulent type (variola major) and also of unknown origin.

Scarlet Fever.—This disease showed no notable features during the year, continuing to be highly prevalent but mild in character. A small outbreak from milk infection occurred in Wokingham, Berkshire, at the end of June.

Diphtheria.—The position with regard to diphtheria is unsatisfactory. If the usual periodic fluctuations are disregarded, there is no sign of diminished prevalence. Reference to the diagram below indicates that, while the weekly notifications in the first half of the year were below the average (median) value for the corresponding weeks of the



ENGLAND AND WALES: WEEKLY NOTIFICATION OF ENTERIC FEVER AND DIPHTHERIA IN 1937, PER CENT. OF MEDIAN FOR THE CORRESPONDING WEEK 1928–36

ENGLAND AND WALES

Number of Notifications of Certain Infectious Diseases in 1937,* *compared with* 1936

	Smallpox	Scarlatina	Diphtheria	Enteric Fever (including Typhoid)	Pneumonia (Acute Primary and Influenzal)	Cerebro-spinal Fever	Acute Polio-myelitis	Acute Polio-enceph-alitis	Acute Enceph-alitis Lethargica	Dysentery
1937	5	95,853	61,850	2,157	55,456	1,167	773	88	226	4,066
1936	12	104,698	57,729	2,443	46,062	967	528	52	268	1,303

* Provisional figures, compiled from the registrar-general's weekly returns for 52 weeks commencing Jan. 3 (corrected for each week).

previous nine years, the reverse was the case in the second semester. In spite of efforts on the part of many authorities to secure immunization of children, it is doubtful whether any has succeeded in protecting a sufficient number of children to affect the volume of cases. In Manchester, where immunization has been vigorously applied during the past 10 years, the attack rate fell in 1931–35 as compared with 1923–27, whereas the average rate for 120 county boroughs in England rose. The incidence in Manchester, however, has risen in 1936 and 1937, and it is probably unsafe to attribute the past behaviour of the disease to immunization. Neither in this city nor anywhere else in the United Kingdom has immunization been pushed to the extent of 30 per cent. of children under five years of age which Godfrey found to be roughly the determining factor in New York State.[1] On the other hand, in Cork, Eire, where a high proportion of the young children has been immunized, the fall of prevalence has been striking since 1932 and more especially since 1935.[2]

Enteric Fever.—As the table above shows, enteric fever, including typhoid and the paratyphoids, was not generally more prevalent than in 1936, but the annual figures mask events in the two years which were of unusual interest. The notifications for 1936 were swelled by 718 cases of typhoid occurring in the early autumn as the result of a milk-borne epidemic at Bournemouth, and the level of incidence during the greater part of 1937 remained low until an outbreak of typhoid began in Croydon at the end of October. By the end of the year, 290 cases and 33 deaths had occurred in this epidemic. It was believed to be due to the pollution of a deep well, situated in the chalk, and supplying the part of the town where all the initial primary cases occurred. A workman engaged in repairs at the well from Sept. 28 to Oct. 26, was found to be a carrier of the typhoid bacillus, so infecting the water-supply, a course of events reminiscent of that recorded in Worthing in 1893. The land adjacent to the well had also been developed for housing purposes, and there was evidence of pollution of the soil with farm drainage. It has long been realized that wells in the chalk are liable to sudden pollution through fissures, and the authority at Croydon had installed a chlorination plant in 1928 for the well-water in question, but it had been used only intermittently. Italy was the only European country recording a marked increase of enteric fever during the year.

Influenza.—The increase of deaths from pneumonia is a rough indication of the prevalence of influenza. An epidemic began towards the end of Dec. 1936, spreading from London and the south northwards, and reaching its peak at the end of January. The type of disease was not severe, but prevalence was heavy. Throughout England and Wales, 15,649 deaths were certified in the first quarter of the year as being due to, or associated with, influenza. Judged by the mortality in this quarter, the 1936–37 epidemic ranks as fifth in order of severity since 1920, the last serious outbreak having occurred in 1933.

Acute Poliomyelitis and Polioencephalitis.—The number of cases of these diseases was greater than in any year since 1927. No epidemics have been reported. The cases have been widely distributed throughout the country, with a slight tendency to cluster round London. The increase of prevalence was not confined to Great Britain, but was especially pronounced in Denmark and Switzerland, and the incidence in Germany, which had been high in 1936, was even greater in 1937. The most notable outbreak was in Australia, in and around Melbourne, where the disease was characterized by unusual transmissibility and virulence and by its onset in mid-winter (June).

Dysentery.—This disease had been increasing steadily since 1934, but in 1937 it more than trebled its incidence in the previous year. As usual, it began to be more prevalent in the late summer, but, with the exception of an epidemic in Luton, the bulk of the notifications were received in November and December. Other small local outbreaks occurred, but high prevalence was general, the London area being particularly affected. As far as bacteriological records are available, the causative organism appears to have been *Bacterium Sonnei*. Similar increases have been observed in many European countries, including Norway, Sweden, Denmark, Germany, and Italy. The Luton epidemic began early in August, and lasted for more than 10 weeks. The number of cases notified was 302, but it is estimated that in this town of 84,372 inhabitants, the actual number of cases ran into thousands.[3]

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(R. M. F. P.)

In the United States each year finds the bulwark which medical science has erected against disease increasing in efficiency; but with increasing travel from one part of the world to another, particularly in aeroplanes, new problems in the control of epidemic diseases have arisen. Diseases which formerly were limited to one section of the world are now brought close to parts where they were formerly unknown. There is danger of the spread of yellow fever to North America by aeroplane. Certification of the origin of passengers and the fumigation of aeroplanes have been instituted. Smallpox may be brought by infected individuals from one country to another by aeroplane. Therefore, vaccination of all flying personnel against smallpox is also being carried out.

New routes, for the administration of vaccines, have been constantly sought. A number of investigations of the intra-nasal route have been made. Jenson of Denmark gave intra-nasal instillations of toxoid, following a one-treatment hypodermic injection of toxoid, and found 96 per cent. of the individuals so treated were protected against diphtheria, as shown by the Schick test. Definite evidence has been presented, showing that there is a marked increase in the incidence of trichinosis. It is beginning, therefore, to be recognized as a public health problem, requiring the institution of effective measures for controlling it.

Another important advance in the control of epidemics in 1937 was the demonstration of the effectiveness of a vaccine prepared by the Pasteur Institute in the control of bubonic plague in Madagascar. Animals infected with *B. pestis* were found in Utah and neighbouring States, showing the desirability of search in other States for plague-infested animals and fleas. (H. Bu.)

EPSTEIN, JACOB (1880–), sculptor of Russo-Polish descent, born in New York, resident in England. An account of his life and work may be found in the *Ency. Brit.*, vol. 8, p. 664. In June 1937, the London County Council drew attention to the dangerous condition of the 18 figures carved by Epstein in 1908 to adorn the building in the Strand occupied at that time by the British Medical Association, and at present the offices of the High Commissioner for Southern Rhodesia; but the sculptor protested strongly against the High Commissioner's proposal to remove them, asserting that such a course would involve their destruction, and the council subsequently decided to endeavour to secure their preservation. In October, an exhibition of Mr. Epstein's work was opened at the Leicester Galleries, London, including 'Consummatum Est', an alabaster figure of the Christ, lifeless after the Crucifixion, regarding which strong critical attacks were met by impassioned defence in which the sculptor himself, according to his custom, took no part. Several new portrait statues—of Mr. J. B. Priestley, Sir Frank Fletcher, Prof. Franz Boaz, 'Kathleen', and others—were exhibited on the same occasion.

ERITREA, an Italian colony, now forming part of Italian East Africa (*q.v.*), covering about 46,000sq.m., bounded N. and E. by the Anglo-Egyptian Sudan, S. by Ethiopia, and having a long coast-line (670m.) on the Red Sea; pop., Italians, 4,200; other Europeans, 370; natives, 596,000. Asmara is the capital, Massawa the chief port, and in April 1937 it was announced that a new port was to be built at Assab, at a cost of 80,000,000 lire. The natives, apart from a few Coptic Abyssinians, are Mohammedan; education is in the hands of the rigorously State-controlled Roman Catholic missions.

Agriculture and stock-raising are the chief industries but the country has never been self-supporting, and most of the Italian colonists are labourers imported at high wages for purposes of exploitation. In Nov. 1937 Marshal Graziani, their viceroy, stated that the finances were 'on a fictitious footing'; and whereas imports from Italy for the first three months of that year amounted to 345,900,000 lire (a vast increase), chiefly in cotton textiles, wine, tobacco, and foodstuffs, exports to Italy from the whole of Italian East Africa were only 51,900,000 lire.

Budget estimates for 1935–36 were: revenue, 144,059,004 lire, including a State contribution of 116,290,000 lire; expenditure (civil and military) balanced this figure.

ERMAN, ADOLF, German Egyptologist of international repute; born in Berlin Aug. 31, 1854; died June 26, 1937. In 1885 he became director of the Egyptian section of the Berlin Museum. Professor Erman brought out, between 1926 and 1931, a dictionary of hieroglyphics, but his scholarly interest in things Egyptian was not confined to linguistics. The best known to English readers of his works are *Life in Ancient Egypt* (tr. 1895); *Aegyptische Religion* (tr. 1907), and *Literature of the Ancient Egyptians* (tr. 1927).

Wide World Photos]

THE PORT OF MASSAWA

ERNLE, ROWLAND EDMUND PROTHERO, 1st Baron, British agriculturist and writer; born in Clifton-on-Teme, Sept. 6, 1851; died at Wantage, Berks, July 1, 1937. A biographical notice of him appears in the *Ency. Brit.*, vol. 8, p. 694. His work as minister of agriculture from 1916 to 1919, when he materially increased the home production of food, earned him a place in politics at least as high as that to which his writings entitled him in the world of letters. Lord Ernle took little part in public life after his retirement. He was president of the English Association 1921–22, and of the Marylebone Cricket Club 1924–25. Among the honours he received was the M.V.O. in 1901 and the gold medal of the Royal Agricultural Society in 1935; and the Grand Cross of the Greek Order of the Redeemer was also conferred upon him. His last considerable publication was *The Light Reading of our Ancestors: Chapters in the Growth of the English Novel* (1927). He married first, 1891, Mary Beatrice Bailward (*d.* 1899), and second, 1902, Barbara Hamley (*d.* 1930). By the former marriage he had a son, killed in the War, and a daughter. On his death the peerage became extinct.

EROSION: *see* SOIL EROSION AND SOIL CONSERVATION.

ESPERANTO: *see* UNIVERSAL LANGUAGES.

ESTONIA (*Eesti Vabariik*; Ger. *Estland*), republic of north-central Europe, N. of Latvia, member of the League of Nations. Capital, Tallinn (Reval) (seaport; 140,000). Pro-president, Konstantin Päts (appointed 1933). National flag, blue, black, and white horizontal stripes.

Area, Population, and Cities.—Area: 18,353sq.m., divided into 11 districts; population: (1934), 1,126,413 (five-sixths Lutheran, though there is no State religion); 88·2 per cent. are Estonian, 8·2 Russian. Towns (1935): Tartu, 59,000; Narva, 24,000; Pärnu (seaport), 21,000.

Education figures: (1934–35) 1,246 elementary schools (obligatory and free); 62 middle schools; (1936) in Tartu (Dorpat) State university, 3,052 students.

History, Trade, Finance, and Defence.—A virtual dictatorship has prevailed since prorogation of the Diet (1934). A new Constitution (the third; drafted in August) provided for: election of president for six years (universal suffrage; secret ballot); election of two chambers (29; 40) for five years; president's wide rights of veto; individual liberty and freedom of conscience. A sterilization law became applicable (April) to mental and physical defectives (not under 10 years, and with other reservations). Lord Plymouth visited Tallinn in June.

Farming supports 70 per cent. of the population ; butter and poultry are exported. Nevertheless, industrialization is making strides (textiles, paper, oil, flax, leather) ; there is no unemployment, but a shortage of farm labour. Imports (1936) : 86,846,000 kroons (£4,825,000) ; exports : 83,191,000 (£4,622,000) ; Great Britain takes two-fifths.

Currency unit : Estonian *kroon* (at par, 18·16 kroons = £1). Budget (1936–37 estimate) : 88,646,000 kroons. Notes (Bank of Estonia, three-quarters covered) 43,057,000 kroons.

Army (conscript ; 1 year's service with colours) : 1,313 officers, 9,310 others ; 68 aeroplanes ; navy : 1 torpedo boat, 4 gunboats, etc.—2 submarines are building in England.

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(H. F.)

Wide World Photos]

GENERAL VIEW OF THE CITY OF REVAL, THE CAPITAL OF ESTONIA

ETCHING AND ENGRAVING. A survey of etching during 1937 reveals a continued development along the geographical lines followed in recent times. On the continent of Europe, France, after the golden era of the nineteenth century and since the death of such masters as Forain and Lepère, is producing more important work in line-engraving, woodcut, and lithography, than in the bitten line, though Villon, Féau, Jacquemin, Guastalla, Hasegawa (Japanese), Berger, Alix, Segonzac, Le Riche, Calevaert-Brun, Camy, Laurencin, Derain, Matisse, Braque, Picasso (Spanish), and Chagall and Kandinsky (Russian), are carrying on the great tradition of French art. The International Exhibition at Paris afforded an excellent review of contemporary work.

In Italy, Mauroner, Disertori, Chiappelli, Bianchi-Barriviera, Lipinsky, Galuzzi, and Mazzoni-Zarini, are representative, while Polish graphic artists of to-day have devoted themselves to the block-print, with the etcher Zakrzęwski as an exception. In Hungary, on the other hand, etching flourishes in the hands of Vadász, Varga, Weil, Patkó, Emánuel, Barosay, Kaveczki, Zador, Beron, Uitz, Bartos, Buday, Bottyány, and Julius Komjáti who continue to produce beautiful and significant plates. The Austrian Plankh, the Bohemian Coubine, and the Rumanian Negulesco, are conspicuous figures among the etchers of their respective countries. In Czechoslovakia there are Vondrous, Švabinsky, Šimon, Stretti-Zamponi, Silovsky, Boudà, Alex, and Stretti.

Holland and Belgium are carrying on their rich traditions of the past, the latter country comprehensively represented in the recent exhibition of Belgian Graphic Art at Brighton. Bagdatopoulos and George Constant, Greeks by birth but living in the United States, have worked on the copper, while Mukul Dey is India's exponent of the etching medium.

The modern German school continues with little change, though in the death of Max Liebermann it lost one of its most distinguished members. Kaethe Kollwitz and Otto Dix, however, remain and there are, in addition, Beckmann, the sculptor Kolbe, Karsch, Kleinschmidt, Marcks, Heckel, Hofer, Sintenis, Nolde, and Gruner. Feininger, Edzard, and Roesch, are living in the United States, and Kirchner in Switzerland. In Sweden, too, there is an independent and well-established school, less affected than might be supposed by the influence of Zorn. The internationally known Fridell died in 1936, but there remain Ahlquist, Borglind, Elgström, Engström, Fougstedt, Hedlund, Holmberg, Jansson, Johansson, Johanson-Thor, von Rosen, Sallberg, Sparre, Stallarholm, and Zanden. Interesting work is also being done in Norway by Nordhagen and in Denmark by Stubbe and Christensen.

Tradition is strong in Great Britain, and etching there has been less affected by the so-called ' modern ' influence than is the case on the Continent and in the United States. The great Scotch triumvirate of Cameron, Bone, and McBey are still outstanding, though the first named published nothing in 1937. Nor did the well-known Brockhurst, Blampied, Rushburg, and Lumsden publish anything, though Griggs, Briscoe, and Hardie brought out beautiful plates. Others active were Airy, Brammer, Buckton, Burridge, Cowern, Davis, Delleany, Drury, Fairclough, Fleming, Gross (identified with the French school), Holloway, Lack, Lindsay (an Australian), Nixon, Osborne, Pearsall, Smart, Spencer, Squirrell, Taylor, Thompson, Tod, and Wilson. The Royal Society of Painter-Etchers and Engravers, with an annual exhibition in London, is the principal English print organization. Barry and Taylor are representative Canadian etchers, where the Society of Canadian Painter-Etchers and Engravers has renewed its activity.

Artists in the United States share with their British cousins a greater activity in the field of etching than is taking place anywhere else in the world to-day, and the growing interest among laymen is demonstrated by the steadily increasing number of print societies and exhibitions. The Print Makers' Society of California, the Chicago Society of Etchers, and the Society of American Etchers are the three leading groups, although numerous others exist all over the country. Each sponsors an annual national and several travelling exhibitions, reflecting all the various influences which have manifested themselves in contemporary American print making. Any survey would include Butler, Chamberlain, R. Bishop, I. Bishop, Clark, Costigan, Ganso, Handforth (living in the Far East), Kappel, Landeck, M. Lewis, Lucioni, Marsh, Morgan, Nisbet, Rosenberg, Roth, G. Wright and R. S. Wright, Dook, Allen, Auerbach-Levy, Bacon, Berdanier, Brooks, Cadmus, Didur, Drury, Eby, Gallagher, Grant, Hall, Hansen, Heckman, Heintzelman, Higgins, Hoffman, Horter, Hutty, Kinney, Kloss, Kuniyoshi, Loggie, Margulies, McNulty, Nordfeldt, Ostrowsky, Partridge, Reynard, Ryder, Schaldach, Sloan, Smith, Sternberg, Sterner, Tittle, Tuttle, Vargish, Walkowitz, Washburn, S. M. Weber, Wickey, K. S. Williams, Woiceske, E. H. Woodbury, M. Young, and C. J. Young.

ETHICS. The world to-day presents the moral philosopher with plenty of problems in individual, social, and political ethics. These problems, however, do not seem to have attracted all the attention they deserve. An onlooker attending the recent International Congress of Philosophy in Paris might, not altogether unreasonably, have carried away the impression that philosophers as a class live in a world apart, and that they have but little contact with the ordinary work-a-day world. What is even more regrettable is that in some cases in which the spirit of the age has penetrated the philosopher's study, it has infected him in a manner hardly worthy of a well-balanced mind. Last May, a number of distinguished American philosophers, headed by John Dewey, deemed it advisable to convene a special conference, held in New York City, in order to consider the growing trend towards dogmatic authoritarianism among philosophers and men of science, and to devise some means of counteracting it. That the official philosophers in dictator countries should be found to criticize adversely the moral ideals of some of the world's greatest minds is not altogether surprising. Few people are made of the stuff of martyrs; and even philosophers cannot always be expected to sacrifice their own and their dependants' interests on the altar of Truth. In free countries there are no such temptations, and consequently no such excuses. Yet from time to time one meets with open avowals of ethical relativity in the pages of philosophical periodicals. Moreover, the influence of the world's moral decline shows itself occasionally also in other, more innocent, ways. For example, in G. H. Sabine's *History of Political Theory*, very little attention is devoted to philosophers like Spinoza, Kant, and Green, who upheld the ideal of a universal, international community of mankind; and this comparative neglect is probably due to the author's feeling that the present world is too narrowly nationalistic seriously to consider international ideals.

However, the ethical problems of our age have not been entirely neglected, and a number of important treatises on various aspects of moral philosophy have appeared in the course of the past year. W. E. Hocking's *The Lasting Elements of Individualism* examines the conflicting claims of individual freedom and adequate State control, and indicates in what way they can be reconciled. The author criticizes the kind of liberalism which lays more stress on rights than on duties, that claims freedom of thought and of speech for unthinking ranters, and which moreover fails to appeal to the heroic sense in man. He also attacks the superficialities of Pragmatism, Fascism, and Marxism, and accuses the last two of attempting to remedy the unequal mutilations of some people under industrialism by an equal mutilation of all. Similar problems are discussed in *Authority and the Individual* by John Dewey and others; in *Force or Reason?* by H. Kohn, who takes the field against the cult of force and the dethronement of reason, and is sufficiently optimistic to believe in the eventual emergence of an internationalism based on local democracies; and in *Lawlessness, Law, and Sanction*, by M. T. Rooney, who maintains that the blame for the tendency to lawlessness lies partly with the secular, non-spiritual nature of the moral and legal sanctions commonly stressed. *The Destiny of Man*, by Nicolas Berdyaev, attempts a philosophic and religious vindication of human individuality, both as having an absolute intrinsic value, and as the creator and bearer of super-personal ethical values.

One of the most interesting books of the year is Viscount Samuel's *Belief and Action*. Like the late Lord Balfour and Lord Haldane, the author has used his holiday from politics as an opportunity to attain a philosophic 'conspectus of things'; and the account of his general orientation makes stimulating reading. The book opens with an effective description of 'this time of confusion', when science has undermined the old orthodoxies, and the root ideas of liberty and justice are rejected by dominant parties in powerful States; when widespread poverty continues in the presence of abundance, and breeds a discontent and a sense of injustice which threaten the structure of society; and when the world is faced with the danger of a general war. As an experienced statesman, the author has many valuable things to say about the problems of 'Poverty and Property', 'Liberty', 'The Nation and the World', 'Conditions of Peace', etc. His views are set out in a spirit of commendable calm and restraint, and deserve the most serious attention. Turning to the more usual type of academic treatises on ethics, *The Concept of Morals*, by W. T. Stace, maintains that morality is independent of cosmological theories, that its essence is justice, and that justice is the recognition of the intrinsic equality of all persons as persons. Moral laws, it is contended, are universal, though not absolute, and empirical in origin, but not relativistic. *Social and Cultural Dynamics*, by P. A. Sorokin, gives an account of the fluctuations in systems of truth, ethics, and law. Other books to be noted are: E. E. Ericksen's *Social Ethics*; F. L. Leander's *Humanism and Naturalism*; A. C. Garnett's *Reality and Value*; L. A. Reid's *Creative Morality*; and G. S. Jury's *Value and Ethical Objectivity*.

The special problems of commercial and industrial ethics constitute the theme of the following two volumes. In *Getting and Earning*, by R. T. Bye and R. H. Blodgett, it is urged that equality of incomes is neither feasible nor desirable, but that the evils of inequality can and should be mitigated without causing an upheaval. Unearned incomes should be abolished; and those who do something socially desirable should receive an income equivalent to the normal competitive value of the service rendered. 'Where much is given much is required'. Inequality of incomes, the authors fancy, will then be justified, and not resented. In *Business Ethics*, by F. C. Sharp and P. G. Fox, the subject is discussed in a more realistic, and less Utopian, spirit. A fair deal, it is maintained, must satisfy the following conditions: (1) full knowledge of all essentials; (2) satisfaction upon reflection on the terms of the deal; (3) the determination of the terms by agreement in open competition. The various problems discussed are illustrated by relevant legal cases.

Lastly, reference may be made to a collective work entitled *Human Affairs*, by R. B. Cattell, J. Cohen, R. M. W. Travers, and others. The volume is intended to serve as the herald of a new periodical designed to show what science can do for man. (*See* also PHILOSOPHY.) (A. Wo.)

ETHIOPIA, the ancient East African empire of Abyssinia, incorporated since 1936 as part of Italian East Africa (*q.v.*). The ruler is still, *de jure*, the emperor Haile Selassie; but the King of Italy has been recognized as emperor by the totalitarian States and some others, while still others have representatives in Rome accredited to the 'King-Emperor'. The Italian viceroy is the Duke of Aosta, who succeeded Marshal Graziani in Nov. 1937. Ethiopia remains nominally a member of the League of Nations.

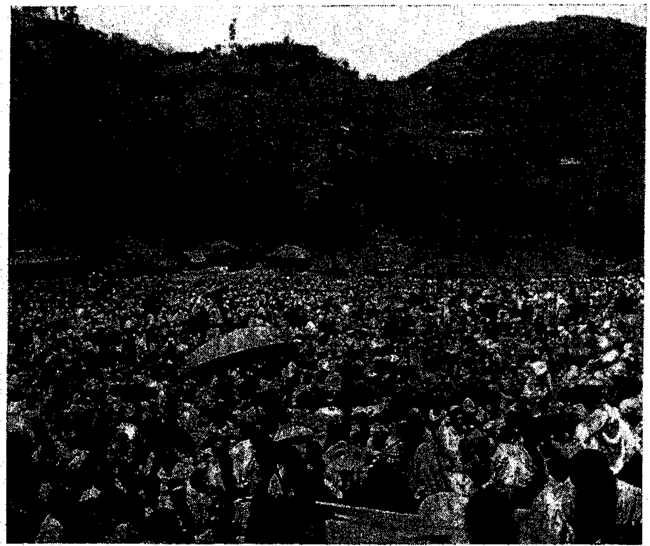
Estimated area, *c.* 350,000sq.m.; the population was estimated by the Italians (1937) as 7,600,000. The capital is Addis Ababa. The Abyssinians are Christians, belonging to the Coptic Church (*q.v.*).

History.—Many Abyssinian notables submitted to the Italians on Jan. 10, 1937, and the armies under Ras Desta and Gabre Mariam were defeated on Jan. 25 and Feb. 23. Ras Desta and other Abyssinian leaders were executed. It is certain that hostilities were continuing up to November, when 5,000 Abyssinians were reported killed and Italian casualty lists were also published. The British chargé d'affaires left Addis Ababa on Jan. 15, and American consular representation terminated on March 31. In March, during a ceremony at Addis Ababa, bombs were thrown which severely wounded the viceroy, Marshal Graziani, and General Liotta. In consequence 2,000 arrests were made, many executions followed, and Italian workmen ran amok, fired huts, and massacred, it is said, some 6,000 inhabitants. Subsequently the viceroy ordered the expulsion of more than 200 Italians responsible for these reprisals.

Trade and Communications.—Exports of coffee and hides and skins, which in 1934 accounted for nine-tenths of the total exports, have come to an end owing to passive resistance of the natives. Miles of valuable coffee plantations and tracts of agricultural land have been left uncultivated for two years. The gold mines are being exploited, and the total production of Italian East Africa for 1937 was 917lb. A State undertaking, the East African Mining Company, with headquarters at Addis Ababa (Feb. 1937) is authorized to prospect for and work minerals, the State contributing £86,000 to £120,000 annually for three years. Germany is showing technical and financial interest in this undertaking, and there has been a German geological expedition.

The primitiveness of communications is the chief obstacle both to conquest and to exploitation. Traffic on the road from Asmara in Eritrea to Makale in Abyssinia is, according to one witness, still only possible at 6 miles an hour. On Oct. 16, 1937 an 'extraordinary' expenditure of about £32 millions was authorized by royal decree for roads in Africa; and some 125,000 workmen, of whom 75,000 are Italians, are employed on roads which are estimated to cost £16,100,000. Italian labour is on a two-year contract at wages of 33 to 55 lire a week. Wages continue to rise, and native labour demands proportionate pay. Roads to connect Addis Ababa, Harar, and Gondar with the Red Sea are promised for 1939. The costly road to Massawa has, however, detracted from the traffic of the Jibuti railway.

General Economic Conditions.—The cost of living, especially in the capital, is reported to be prohibitive, in spite of efforts to control prices, which leave traders no margin of profit. The branch of Mohammed Ali, an Indian firm of multiple shops, was closed down by order in March, 1937, but was subsequently allowed liquidation and sale to Italian interests. Trade with other countries than Italy has been practically strangled by numerous export and import restrictions, though on Dec. 30 a trade agreement (the details of which have not been divulged) was entered into with Japan, and, by a viceregal decree of Feb. 3, 1938, export of hides to foreign markets is to be encouraged and those exported to Italy restricted to a proportion of those sold elsewhere. Development of foreign trade is to be fostered for the sake of foreign currency and improvement of the trade balance.



Wide World Photos]
FIRST MARKET HELD AT DESSIE AFTER THE ITALIAN OCCUPATION OF ETHIOPIA

Banking and Finance.—The Maria Teresa dollar has been supplanted by the paper lira. In Nov. 1937 the exchange rate was 10½ lire for one dollar, but dollars are practically unobtainable. The Bank of Ethiopia has been dissolved, the manager of the Bank of Italy in Addis Ababa acting as liquidator. A claim was made for securities held for the Bank of Ethiopia by the Bank of Egypt.

EUROPE. The year 1936 was marked by a succession of grave events which threatened more than once to bring Europe to the verge of war: the re-occupation of the Rhineland by Germany in defiance of the Versailles and Locarno Treaties; the Italian conquest of Abyssinia and the collapse of the League of Nations' policy of sanctions; the outbreak of the Spanish Civil War; and the formation of two opposing groups of which the Franco-Soviet pact and the 'Rome-Berlin axis' were the nuclei. The year 1937 in Europe was free from any dramatic crisis. The Spanish Civil War dragged on inconclusively. But though no decisive improvement can be said to have occurred in relations between the leading European Powers, and though rearmament everywhere proceeded at a feverish rate, tension relaxed somewhat towards the end of the year. Several causes contributed to this relaxation. It became more apparent during 1937 that none of the Great Powers, however ambitious and dissatisfied, was disposed for the present to go to the length of provoking a European war; the war in the Far East diverted attention to another and more urgent danger-spot; and Great Britain, by sending Viscount Halifax on a semi-official mission to Berlin in November, showed that she was still bent on a policy described by the British prime minister as 'a general settlement of the grievances of the world without war'.

The Spanish Civil War.—In the Spanish Civil War, the insurgents improved their position by the conquest of the Basque districts in the north, and now hold some two-thirds of Spanish territory. But they have failed to dislodge the government forces from Madrid or from the eastern provinces. In spite of the agreement which has been in force since Feb. 20, 1937, prohibiting the sending of foreign 'volunteers' to Spain, both sides continue to enjoy substantial foreign aid in men and material, Italy having officially admitted the presence of 40,000 Italian troops with the insurgent forces. Meanwhile, the Non-Intervention Committee met at frequent intervals in London. In August, the British government laid before it a scheme for providing for the withdrawal of foreign volunteers and the granting of belligerent rights to the insurgents. This scheme was still under discussion at the end of the year.

The Mediterranean.—Anglo-Italian relations, already seriously damaged by British leadership in the application of sanctions and by Italy's bid for supremacy in the Mediterranean, further deteriorated in 1937. A 'Gentlemen's Agreement' between Great Britain and Italy, signed on Jan. 2, by which both parties reaffirmed their intention to respect the *status quo* in the Mediterranean, did not remove British and French suspicion of possible territorial ambitions of Signor Mussolini in the western Mediterranean; and anti-British broadcasts in Arabic from Italian radio stations were a serious annoyance to the British authorities in the Near East. In July and August, numerous attacks were made in the Mediterranean on neutral shipping by unknown submarines, which were not unnaturally assumed to be Italian. The British and French governments, in an agreement signed at Nyon on Sept. 10, decided to establish a naval patrol in the Mediterranean in which Italy was invited to join. From this moment, the submarine attacks ceased as suddenly as they had begun.

Germany and Italy.—The close association between Germany and Italy was frequently emphasized by both sides during the year, notably on the occasion of Signor Mussolini's visit to Germany in September. In November, Italy acceded to the 'Anti-Comintern Pact' concluded between Germany and Japan in the preceding year, and shortly afterwards gave notice of her withdrawal from the League of Nations. In Germany, intensive rearmament was mainly responsible for a decline in the standard of living; and it may well have been this decline which prompted Herr Hitler to raise once more, with repeated insistence, the German claim to the return of her former colonies. This question was among those discussed between Herr Hitler and Viscount Halifax during the latter's visit to Berlin in November.

In **France** there were also signs of the financial strain of rearmament. In June, the Socialist government of M. Blum was replaced by the Coalition Radical-Socialist government of M. Chautemps, and a programme of financial reconstruction launched, which involved a further devaluation of the franc and important modifications in the 40-hour working week introduced by M. Blum.

In the **Soviet Union,** the second Five-Year Plan was brought to a successful conclusion, and the first elections under the new constitution were held on Dec. 12. These proved to be something of a farce. Only one candidate was nominated in each constituency, and received the votes of from 90 to 95 per cent. of the electorate. Meanwhile, the campaign against 'Trotskyists' and '*saboteurs*' led to thousands of executions, and tens of thousands of arrests. In June, Marshal Tukhachevsky and seven other leading generals were executed on the charge of conspiring with Germany. These events have weakened the position of the Soviet Union as a European Power, and caused serious misgivings in France as to the value of the Franco-Soviet Pact. One result of them has been to make French foreign policy more exclusively dependent on Great Britain.

In **Great Britain,** which in May celebrated the coronation of King George VI, the feature of the year was the immense rearmament programme. In his speech to the Assembly of the League of Nations in September, Mr. Eden stated that the aggregate tonnage of the principal types of warships then under construction for the British Navy exceeded 450,000 tons, that the expansion and re-equipment of the Air Force were proceeding rapidly, and that there was a continuous growth in the production of armaments for all three fighting services.

The Smaller Powers.—The smaller European Powers, unable to compete effectively in the armament race and deprived of any hope in the protective virtue of 'collective security', have pursued, almost without exception, a policy of cautious neutrality. In central Europe, Czechoslovakia alone relies on her alliances with France and the Soviet Union; and the grievances of her large German minority are the pretext, rather than the cause, of her bad relations with Germany. This policy finds little favour with Czechoslovakia's partners in the Little Entente, Yugoslavia and Rumania. Yugoslavia has been on terms of friendship with Germany since 1934. In 1937 she reached an understanding with Italy, who granted her commercial advantages and undertook to bring to an end Italian propaganda against Yugoslavia. In Rumania, a government of Fascist and anti-Semitic tendencies came into power at the end of the year, and this change was expected to reflect itself in Rumanian foreign policy. Economically, Germany has maintained and strengthened her strong position in most of the countries of central and south-eastern Europe.

Fox Photos]
LORD HALIFAX, THE DUKE OF SAXE-COBURG AND GOTHA, AND HERR VON RIBBENTROP AT THE DINNER IN DEC. 1937 OF THE ANGLO-GERMAN FELLOWSHIP

In several European countries the economic situation has improved somewhat during the year, in part owing to expenditure on rearmament, and there has been a slight increase in the volume of international trade. But except for an agreement of limited scope, signed at Oslo in March between Holland, Belgium, and the four Scandinavian States, nothing was achieved in the way of reduction of quotas or tariffs. At the end of the year, hopes of lowering economic barriers centred mainly on the forthcoming trade negotiations between Great Britain and the United States which, if successful, are expected to have favourable repercussions in Europe. (E. H. C.)

EXCHANGE EQUALIZATION FUNDS. The British Exchange Equalization Account was founded in 1932. It originally amounted to £175 millions, but was enlarged to £375 millions in 1933 and to £575 millions in 1937. It is owned by the government, but operated by the Bank of England, the general lines of policy being laid down by the government. Its function is to offset sudden and wide fluctuations in the foreign exchanges, more particularly those due to capital movements. It is not intended to counteract long-term or permanent-exchange movements, such as are caused by a persistent lack of balance between imports and exports of goods and services.

It operates by buying and selling sterling in the foreign exchange market, usually without warning. As its resources are very large, the knowledge that it may intervene has proved a strong deterrent against speculation in sterling. Usually, any foreign currencies it acquires are at once turned into gold. It deals mainly in dollars and francs against sterling and in practice operates so that in case of need it can support the franc or dollar, as well as the pound itself.

To be able to buy and sell at will, it must always hold part of its resources in gold (which can be turned into foreign currencies at will) and part in sterling. On its foundation and subsequent enlargement, there was no difficulty in supplying the Account with sterling, for the government simply issued cash out of the Exchequer. Moreover, the Exchange Equalization Account does not hold its sterling in the form of cash. Instead it re-lends it to the government, thereby reducing the need of the government to borrow elsewhere. On the other hand, as the Account buys gold, it has to get its sterling back from the government in order to pay for the gold. In order to find that sterling the government has to borrow elsewhere.

It follows that for every £1 of gold held by the Exchange Account, the government has to borrow £1 from the money market or the general investor. In practice, the Exchange Account's gold purchases are financed by issues of Treasury bills by tender to the banks and the money market. The statutory size of the Account simply determines the limit on the amount of gold it can hold.

This system leads to a paradoxical result. Under the gold standard, an influx of gold into the Bank of England, occasioned by an influx of foreign money, enlarges the credit base and makes money easier. But if the gold goes into the Exchange Equalization Account, the credit base is not enlarged. On the contrary, the government has to borrow from the banking system in order to pay for the gold. This creates a new demand for credit, and so money becomes tighter. The remedy is for the Exchange Account to sell gold to the Bank of England, as any gold so transferred goes to enlarge the credit base. Gold was so transferred in early 1933 and the summer of 1936. The transfer of £65 millions in Dec. 1936 was because the Account was full of gold nearly up to its limit. To prevent it from enlarging the credit base, the fiduciary note issue was simultaneously reduced by £60 millions.

The Exchange Account, of course, buys gold at the current market price of about 140*s*. per fine ounce. In effect, it re-sells to the Bank of England at the statutory price of 84*s*. 11*d*. per ounce, and has to bear the resulting loss. On June 30, 1937, it held £186·7 millions of gold, valued at 140*s*. per ounce.

The American Exchange Stabilization Fund, set up in 1934, was provided solely with gold, out of the profits arising from the devaluation of the dollar. Until the end of 1936 it could only sell gold, and had no dollars to sell. Thus it could only operate one way. This made it ineffective, for funds were then flowing into the United States, and so it was only being asked to buy gold and sell dollars. The result was that all gold coming into the United States passed into the banking system, and enlarged the credit base. In Dec. 1936, the American administration took power to borrow in order to supply the Stabilization Fund with dollars. This put it in the same position as the English Exchange Account.

The Dutch Exchange Fund, set up in Oct. 1936, resembles the English Account in its constitution and method of operation. The French Fund, like the American Fund, was constituted in Oct. 1936 out of the profits of the devaluation of the franc. It too could only sell gold, but such was the outflow of funds from France during the subsequent year, that it had to sell all the gold it had and then draw on the Banque de France.

Under the Tripartite Agreement of Sept. 1936, there is close co-operation between the various exchange funds. It is often impossible to tell which fund is operating in any market at a particular moment. (N. E. C.)

EXCHANGE RATES. To understand the course of the foreign exchanges during 1937, it is essential to recall the background. England had abandoned the gold standard in 1931, and the United States had devalued the dollar to 59·06 per cent. of its former gold content in 1934. The chief gold *bloc* countries (France, Holland, Switzerland, and Belgium) had held on to the gold standard until Sept. 1936, although Belgium had had to devalue her currency in April 1935. At the end of Sept. 1936, France and Switzerland devalued their currencies, and Holland abandoned the gold standard. Belgium adhered to the gold standard at the April 1935 parity, but other countries, such as Italy and Czechoslovakia, joined in the move. Simultaneously the Tripartite Monetary Agreement was signed by England, France, and the United States, and subsequently adhered to by a number of other countries. Under this, the signatories bound themselves to co-operate in the maintenance, as far as possible, of exchange stability, and to refrain from competitive currency depreciation. The Exchange Funds of the various countries were to work together for these purposes.

The following table, giving the sterling value of most of the currencies concerned, serves to bring the story up to the opening of 1937 :

Value of £1 in	Aug. 1931	Jan. 1936	Dec. 1936
Dollars . .	$4{\cdot}86\frac{5}{32}$	4·93	$4{\cdot}90\frac{15}{16}$
French francs .	124	$74\frac{7}{16}$	$105\frac{1}{8}$
Guilders . .	12.05¾	7·25½	8.96¼
Belgas . .	34·85¼	29.25	29.13
Swiss francs .	24·97½	15.15½	21.37

During the first two-thirds of 1937 the main question was whether France could hold her devalued franc in face of the rising trend of her internal prices and costs and the continued flight of capital abroad. Up to a point, other countries were ready to help, as witness the £40 millions loan made by British bankers to the French railways at the beginning of 1937. Still, the position was complicated at home by the declared social policy of M. Blum's government, and abroad by the sharp spring rise in commodity and security prices followed by the catastrophic break, which began in April 1937, and persisted up to the end of November. The course of events was further complicated by the 'gold scare' of the early summer, by the French change of government at midsummer, and by the 'dollar scare' of November.

The important point to realize is that throughout the whole year the main influence upon the exchanges was movements of capital. Current trade, including both imports and exports of goods and also payments for services, played a comparatively minor part. Also, during the year exchange movements were frequently minimized by Exchange Fund operations, and in place of continual fluctuations there were increases and decreases in the gold holdings of the various Exchange Funds. On the other hand, when exchange movements did at last occur, they were inclined to be sudden and wide. The reader is referred to the main table, which illustrates some of these movements.

The first such movement was in April. By then the gold scare was at its height. There was a general belief that the dollar price of gold was about to be reduced. The London price of gold fell to a discount below the American shipping price, and the British Exchange Fund had to buy gold to support the market. By then the pressure on the franc was severe, and the French authorities took advantage of the general disturbance to allow the franc to slide from frs.106⅜ to frs.111 to the pound.

This new rate for the franc was held until the end of June, when M. Blum's government fell and was replaced by M. Chautemps' government. One of the first acts of the new government was to effect a new devaluation of the franc. The 1926 devaluation had reduced the gold content of the franc from 65½ to 49 milligrammes of gold, and the franc was now devalued to 43 milligrammes. In consequence, sterling rose from frs.111 to just over frs.130 to the pound. Meanwhile, the summer break in Wall Street had caused the pound to rise against the dollar from $4.89 to $4.98.

The pressure on the franc prior to this devaluation had also created certain problems for the British authorities. In order to help both the franc and the London bullion market, the British Exchange Equalization Account had had to make heavy purchases of gold. By the end of June the capacity of the Account to buy gold was near exhaustion, and so an Act was passed enlarging the Account by £200 millions sterling.

During August quieter conditions prevailed, and the new French government tried to set the French finances in order. Unfortunately, the flight of capital from France continued, and in September a fresh break occurred, which at one time carried the pound to just over frs.150. Fortunately, this was the turning-point. Serious weakness had by then developed in the London and New York stock markets, while the impression gained ground that the new French government was proving successful in its financial efforts. Thus capital at last began to return to France, and

LONDON RATES OF EXCHANGE
SPOT RATES

	per £	Dec. 31, 1936	March 31, 1937	June 21, 1937	July 31, 1937	Oct. 25, 1937	Nov. 15, 1937	Dec. 2, 1937
New York . . .	$	$4.91\frac{1}{16}$	$4.88\frac{15}{16}$	$4.94\frac{1}{16}$	4.97¾	4.95⅛	$4.98\frac{13}{16}$	$4.99\frac{1}{16}$
Montreal . . .	$	4.90¾	4.88⅜	4.94⅛	$4.97\frac{15}{16}$	4.95	$4.99\frac{1}{16}$	4.98¾
Paris	Fr.	$105\frac{9}{64}$	$106\frac{11}{32}$	$110\frac{27}{32}$	$132\frac{25}{32}$	146¾	$147\frac{13}{32}$	147⅛
Brussels . . .	Bel.	29.14	29.03½	29.25	29.58½	29.35	29.36½	29.36
Milan . . .	L.	93¼ 93.43 (*g*)	$92\frac{29}{32}$ 92.90 (*g*)	93⅞ 93.82 (*g*)	$94\frac{9}{16}$ 94.60 (*g*)	$94\frac{3}{32}$ 94.10 (*g*)	$94\frac{27}{32}$ 94.80 (*g*)	$94\frac{27}{32}$ 94.80 (*g*)
Zürich . . .	Fr.	21.37	21.45½	21.55¼	21.67½	21.48½	21.61¼	21.60
Athens . . .	Dr.	547½	547½	547½	547½	547½	547½	547½
Helsingfors . .	M.	226¾	226½	226⅛	226⅛	226	226⅛	226⅛
Lisbon . . .	Esc.	$110\frac{3}{16}$	$110\frac{3}{16}$	$110\frac{3}{16}$	$110\frac{3}{16}$	$110\frac{3}{16}$	$110\frac{3}{16}$	$110\frac{3}{16}$
Amsterdam . .	Fl.	8.96½	8,93	8.98½	9.02	8.95½	9.02	8.98½
Berlin . . .	Mk.	12.19½	12.14½	12.32½	12.37	12.32½	12.36½	12.37½
(Reg. Marks; per cent. discount)		51½	51½	48½	44½	50½	47½	48
Vienna . . .	Sch.	26½	26	26½	26½	26½	26½	26½
Budapest . . .	Pen.	27 16½ (*a*)	24¾	25	25⅛	25	25	25⅛
Prague . . .	Kc.	$140\frac{3}{16}$	140⅛	141¾	142¾	$141\frac{9}{16}$	142	142
Warsaw . . .	Zl.	26	25¾	26	$26\frac{5}{16}$	26¼	26⅜	26⅜
Riga	Lat.	25¼	25¼	25¼	25¼	25¼	25¼	25¼
Bucharest . . .	Lei.	670	667½	670	670	670	677½	677½
Constantinople . .	Pst.	613 616 (*b*)	612 615 (*b*)	616 623 (*b*)	618 627 (*b*)	620 624 (*b*)	619 623 (*b*)	619 624 (*b*)
Belgrade . . .	Din.	213	214	216	216	216	215	216
Sofia . . .	Leu.	405	405	405	405	405	405	405
Oslo	Kr.	19.90	19.90	19.90	19.90	19.90	19.90	19.90
Stockholm . . .	Kr.	19.40	19.40	19.40	19.40	19.40	19.40	19.40
Copenhagen . .	Kr.	22.40	22.40	22.40	22.40	22.40	22.40	22.40
Alexandria . . .	Pst.	97½	97½	97½	97½	97½	97½	97½
Brit. India . .	Rup.*	$18\frac{5}{32}$	18⅛	18⅛	18⅛	18⅛	18⅛	18⅛
Hong Kong . . .	$ *	$14\frac{15}{16}$	$14\frac{15}{16}$	$14\frac{13}{16}$	$14\frac{25}{32}$	15	15	15
Kobe . .	Yen *	$13\frac{25}{32}$	14	$13\frac{31}{32}$	$13\frac{31}{32}$	14	14	14
Shanghai . . .	$ *	14½	$14\frac{17}{32}$	$14\frac{13}{32}$	14¼	14¼	$14\frac{3}{16}$	$14\frac{3}{16}$
Singapore . . .	$ *	$28\frac{5}{32}$	$28\frac{3}{16}$	$28\frac{3}{16}$	$28\frac{5}{32}$	$28\frac{5}{32}$	$28\frac{3}{32}$	$28\frac{3}{16}$
Rio	Mil.*	$2\frac{15}{16}$ 4¼*d.* (*a*)	$3\frac{1}{32}$ 4¼*d.* (*a*)	$3\frac{3}{16}$ 4¼*d.* (*a*)	$3\frac{7}{32}$ 4¼*d.* (*a*)	$2\frac{23}{32}$ 4¼*d.* (*a*)	$2\frac{57}{64}$ 4¼*d.* (*a*)	$2\frac{11}{16}$ (*d*)
B. Aires . . .	$	16.05 15 (*a*) 16.12 (*c*)	16.20 15 (*a*) 16.12 (*c*)	16.19½ 15 (*a*) 16.12 (*c*)	16.44½ 15 (*a*) 16.12 (*c*)	16.62½ 15 (*a*) 16.12 (*c*)	16.85 15 (*a*) 16.12 (*c*)	16.98½ 15 (*a*) 16.12 (*c*)
Valparaiso . . .	$	131½ (*e*)	128 (*e*)	128 (*e*)	128 (*e*)	124 (*e*)	124 (*e*)	124 (*e*)
Montevideo . . .	$ *	26¾ 39⅞ (*a*)	27 39⅞ (*a*)	28¼ 39⅞ (*a*)	28 39⅞ (*a*)	27½ $39\frac{13}{16}$ (*a*)	26 $39\frac{13}{16}$ (*a*)	25½ $39\frac{13}{16}$ (*a*)
Lima	Sol.	19½	18.70	18	18¼	19¼	19¼	20½
Mexico . . .	Pes.	18	18	18	18	18	18	18
Manila . . .	Pes.*	$24\frac{31}{32}$	24½	$24\frac{7}{32}$	24¼	$24\frac{7}{32}$	$24\frac{1}{32}$	$24\frac{1}{16}$
Moscow . . .	Rbls.	24¾ (*f*)	$25\frac{1}{32}$ (*f*)	26 (*f*)	26.35¾	26.23⅞	26.45⅜	26.43¾

(*a*) Official rate. (*b*) Under Anglo-Turkish agreement. (*c*) Average remittance rate for importers. (*d*) The official rate for the milreis was abolished in November, 1937. (*e*) Nominal. (*f*) Approximate. Dealings in roubles at 4¼ French francs to 1 rouble. (*g*) For account Controller of Anglo-Italian debts.

* Pence per unit of local currency.

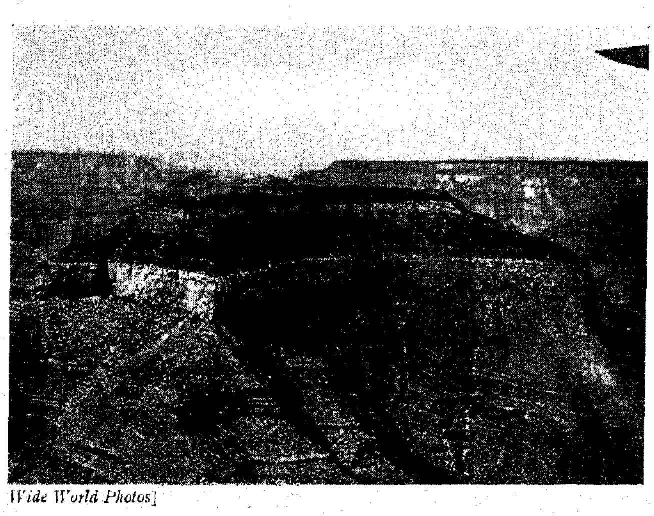
the movements were accelerated in November by a rumour that the American government was contemplating an increase in the dollar price of gold in order to arrest the American autumn business recession. Sterling fell to frs.147, and the French Exchange Fund was able to recover a substantial part of its previous gold losses. Simultaneously sterling rose to $5.02. By the end of November this particular scare had subsided, and sterling came back to $4.99 ; but France held most of her regained gold. Indeed, the French position was further strengthened during the autumn, for loans from Switzerland and Holland to the French railways, together with the French gold recoveries, enabled the French railways to repay the sterling credit granted to them at the beginning of the year. (N. E. C.)

The whole history of 1937 is thus one of sudden capital movements, inspired partly by fear and rumour, and partly by the radical change in conditions on the London and New York stock markets—particularly New York, where the autumn collapse was more serious. Underlying this was the deterioration in French finances up to midsummer, followed by the autumn recovery. Commercial influences had little effect upon the exchanges. (N. E. C.)

EXHIBITIONS : *see* FAIRS AND EXHIBITIONS.

EXPLORATION AND DISCOVERY. Dr. G. Weidman Groff, of Lingnan University, Canton, China, led a National Geographic Society expedition into the interior of Kwangsi Province, South China, to explore that little-known region. The expedition obtained the first specimens known to western science of the lohon plant, the fruit of which is highly prized by the Chinese for its medicinal qualities. In 1937 the National Geographic Society, in co-operation with the United States Navy, sent to Canton Island, in mid-Pacific, an expedition which on June 8, made important studies of the sun during the longest total solar eclipse in over 1,200 years. Dr. William M. Mann led the National Geographic Society–Smithsonian Institution East Indies expedition in the Netherlands Indies and adjacent portions of south-eastern Asia. A cross-section of the fauna of the region was represented in a cargo of animals taken to the United States and presented to the National Zoological Park in Washington.

Antarctic Exploration.—The British Graham's Land Expedition, led by John Rymill, completed a stay of two and a half years in the Antarctic. It reported that Graham's Land, opposite South America, is not an island but a peninsula of the Antarctic continent. Alexander I Land, nearby, was found to be several times larger than previously reported. Rocks in Graham's Land were found to be related to formations at the southern tip of the Andes. Lars Christensen of Norway led an expedition in 1936–37 to chart the little-known coast line in the Atlantic sector of the Antarctic continent between long. 45° E. and long. 20° W. Viggo Wideroe, aviator with the expedition, reported discovery of a range of mountains between the 35th and 40th degrees E. long. and about 70° S. lat. The British exploration ship, *Discovery II*, completed a 20-months' study of Antarctic waters, laying emphasis on smaller forms of marine life and the distribution of whales.



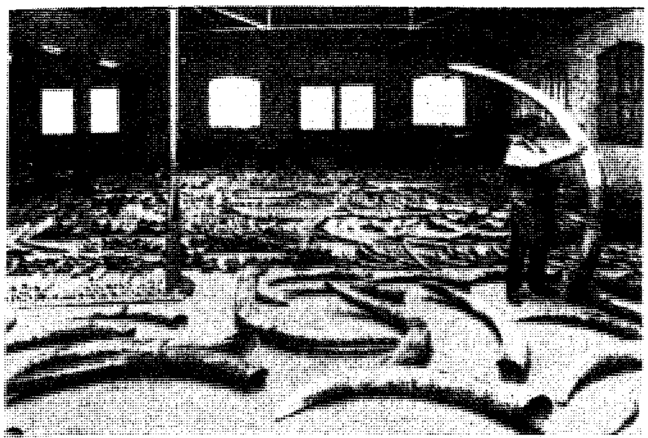
Wide World Photos]

VIEW OF SHIVA'S TEMPLE, WOODED PLATEAU IN THE GRAND CANYON

American Exploration.—Dr. H. E. Anthony, of the American Museum of Natural History, led a party which, on Sept. 16, climbed Shiva's Temple, a 300-acre plateau in the Grand Canyon of Arizona, believed to have been isolated about 20,000 years by erosion since the glacial period. The expedition found that animals on the plateau had not developed differently from others in the region. Mount Lucania, 17,500ft. high, in south-western Yukon Territory, North America's highest hitherto-unclimbed peak, was scaled on July 9 by Bradford Washburn, Cambridge, Mass., and R. H. Bates, Philadelphia, Pa. An expedition of the Utah Museum Society, exploring the Kaiparowits plateau, in southern Utah, found dinosaur tracks in a sandstone slab, ancient rock paintings in which the swastika is a prominent feature, and a mountain in which coal veins have been burning for centuries. Captain E. E. Loch, leader of the New York Museum of the American Indian Andes–Amazon expedition, reported rediscovery of Inca gold workings in the Llanganates range of the Andes mountains of Ecuador ; finding that the legendary gold of Lake Valverde is only ' gold ' mica, or fool's gold ; mapping previously unexplored territory ; and surveying a new trans-Ecuadorian air route.

Arctic Exploration.—Four Soviet Russian scientists established a camp on an ice floe near the North Pole in May, to spend a year collecting meteorological data for the proposed air route between Russia and the United States. They were in constant touch with Moscow by radio. The camp and its ice floe drifted on a zigzag course towards north-east Greenland, at an average speed of more than three and a half miles per day. Three Russian flyers, Valeri Chkaloff, Georgi Baidukoff, and Alexander Beliakoff on June 20 completed the first flight over the North Pole between Moscow and the United States, landing in Vancouver, Wash. A world-record non-stop and non-refuelling aeroplane flight of 6,262 miles was established on July 14 by three Russians, Mikhail Gromoff, Andrei Yumosheff, and Sergei Danilin, when they landed near San Jacinto, Calif., after taking off from Moscow 62 hours before, and passing over the North Pole. A third party of six Russian flyers, led by Sigismund Levanevsky, flew from Moscow over the same route on Aug. 12, but were forced down between the North Pole and Alaska and never found. (*See* ANTARCTIC EXPLORATION and ARCTIC EXPLORATION.)

EXPORTS AND IMPORTS. As in many other spheres of activity, 1937 may prove to be a turning-point in the field of international trade. The depression of 1929–33 brought international trade almost to a standstill. Some countries found that the prices of their staple exports had fallen to zero, and that huge stocks of their chief products were accumulating, unsaleable in the world's markets. Other countries were faced with external debts which could not be met, and with a consequent breakdown of the whole mechanism of foreign exchange. Most countries rushed to



Port of London Authority]

THE IVORY SHOW FLOOR AT THE LONDON DOCKS

heighten tariffs and impose import quotas and exchange restrictions in an attempt to take shelter as far as possible from the blast of the depression ; and so far as international trade was concerned, these measures simply aggravated the depression.

The years 1933 onwards to 1937 were a period of gradual recovery. Prices rose, surplus stocks were liquidated, production in some cases was regulated by international agreement, and some countries were able to compound with their foreign creditors and relax their exchange restrictions. Currency devaluation also helped to restore equilibrium to international trade. As a result, imports and exports expanded over most of the world. Many countries, however, retained some measure of exchange control, either as an essential part of their new social and economic system of internal government, or because they felt bound to make imports conform in value to their exports. Furthermore, the system of bilateral exchange clearing or payments agreements between pairs of countries persisted, for political as well as economic reasons. While some of these agreements in themselves worked reasonably well, their net effect was that international trade to some extent remained canalized, and was denied an opportunity for full and free recovery.

The United Kingdom.—The trade returns for recent years are summarized below:

Monthly Average	Retained Imports (£ millions)	Exports of British Goods (£ millions)	Import Surplus (£ millions)
1929 . . .	92·6	60·8	31·8
1932 . . .	54·2	30·4	23·8
1933 . . .	52·2	30·7	21·5
1934 . . .	56·7	33·0	23·7
1935 . . .	58·5	35·5	23·0
1936 . . .	65·7	36·7	29·0
1937 . . .	79·5	43·5	36·0

The drop between 1929 and 1932 is very noticeable, even though it was largely but not entirely due to the fall in prices. Since 1933, there has been a progressive recovery, culminating in the 1937 returns, which show imports nearly back to the 1929 level. Exports have improved as well, but the increase is less marked. The result is that the import surplus for 1937 was in excess of that even for 1929.

The growth in the import surplus, especially during the past two years, is due to a variety of causes. First, there is the rise in world prices up to early 1937. This was more pronounced in prices of food and raw materials, which Great Britain largely imports, than in prices of finished goods, which account for most of Great Britain's exports. Next, there was the big recovery in British internal industry and commerce. More raw materials were needed by British manufacturers, and the home demand for their products was such that in some cases export orders were either turned down or not actively sought. British rearmament increased this tendency, particularly in the heavy industries. Apart from these purely British factors, there were the new factors abroad of Japanese competition (up to mid-1937) and German trade based on exchange clearing or compensation agreements. Probably these were of much less importance than the influences previously mentioned.

So far this growth in Great Britain's import surplus has not been a serious matter from the foreign exchange point of view, though all the evidence at the end of 1937 suggested that the year's balance of payments would show a fairly large deficit. Much of Great Britain's trade is either with the Empire or the sterling area countries, and to that extent a trade deficit does not automatically throw a strain upon the pound or upon the British gold reserves. The rearmament demand for raw materials is likely to continue, but the autumn's fall in prices may next year reduce the cost of raw material imports. It is, however, equally likely to affect the purchasing power of many of Great Britain's overseas customers.

The United States.—The following table shows the United States trade returns for recent years :

Monthly Average	Retained Imports ($ millions)	Domestic Exports ($ millions)	Surplus of Exports (+) or Imports (—) ($ millions)
1929 . . .	362	430	+ 68
1932 . . .	110	131	+ 21
1933 . . .	119	137	+ 18
1934 . . .	136	175	+ 39
1935 . . .	170	187	+ 17
1936 . . .	202	201	— 1
1937 (9 months) .	265	260	— 5

The most important development, amidst the fall and recovery of the past eight years, is that the United States' export surplus has turned into an import surplus. Thus her trade balance has at last conformed to the typical balance of a creditor nation, in which payments due from her debtors are received in the form of an import surplus. In spite of the business recession of late 1937, both imports and exports ran well ahead of those of 1936. Here again, it will be of interest to see if there is any falling-off in 1938.

In 1935 and again in 1936, the United States had an adverse balance of payments ($153 millions in 1935 and $333 millions in 1936). Silver purchases, immigrants' remittances to their home countries, and American tourists' expenditure abroad far outweighed interest and dividends on America's foreign investments. Nor is there any reason to believe that 1937 will show a different result. The truth is, that the United States' huge gold acquisitions of recent years were entirely due to the big influx of foreign capital into the United States. The French repatriation of Nov. 1937 led to an immediate outflow of gold from the United States, which again shows how gold and capital movements are linked together.

France.—The French trade returns of recent years are similarly summarized below:

Monthly Average	Imports	Exports (Frs. millions)	Import Surplus
1929 . . .	4,852	4,178	674
1932 . . .	2,484	1,642	842
1933 . . .	2,369	1,539	830
1934 . . .	1,925	1,487	438
1935 . . .	1,745	1,289	456
1936 . . .	2,117	1,288	829
1937 (11 months) .	3,148	1,799	1,347

The adherence of France to the 1928 gold parity of the franc, which lasted up to Sept. 1936, forced on her a policy of continued deflation, which seriously affected her trade. This explains the continued drop in both imports and exports up to and including the year 1935. In Sept. 1936, came the first devaluation of the franc. This caused an immediate and proportionate increase in the cost of most French imports, and this is reflected in the 1936 increase in the value of imports. Exports, however, did not respond at once, partly because French trade was slow in reviving and partly because, unlike imports, the average price of exports is determined by internal conditions rather than by the value of the franc in foreign currencies. Nineteen thirty-seven has witnessed a big increase on both sides. Imports have risen the most in value, due to the 1937 devaluation and depreciation of the franc, and also to the revival in French industry and French rearmament needs. The increase in exports is also substantial, and can be ascribed both to the rising trend of French production costs and to the year's recovery in French trade.

The bigger increase in imports has raised the import surplus to twice its 1929 level. Any such comparison is, of course, confused by the intervening fluctuation in the franc and other currencies, but there is no doubt that in 1937 France had a big adverse trade balance. So far this has been a much less potent cause of the weakness of the franc than the flight of French capital abroad; and if French capital returns, the franc will improve, in spite of a large adverse trade balance. Still, in the long run, the 1937 adverse trade balance is probably bigger than France can tolerate.

Germany.—The trade returns for recent years are as below:

Monthly Average	Retained Imports (RM millions)	Domestic Exports (RM millions)	Surplus of Exports (+) or Imports (—) (RM millions)
1929 . . .	1,120	1,124	+ 4
1932 . . .	389	478	+ 89
1933 . . .	350	406	+ 56
1934 . . .	371	347	— 24
1935 . . .	347	356	+ 9
1936 . . .	352	397	+ 45
1937 (10 months) .	445	476	+ 31

To interpret the trend of the returns, it is first necessary to remember that imports are regulated in such a way as to ensure an export surplus. The valuation of both imports and exports must also be qualified to some extent by the fact that most of Germany's trade is conducted through exchange clearing and compensation agreements, embodying in many cases an agreed rate of exchange. The expansion in imports and exports since 1933, though considerable, falls short of the expansion in Germany's internal activity. This explains the current German argument that her raw material imports now fall short of her needs. It also explains the complex system of import control, designed to meet such varying needs as the requirements of her export industries, rearmament, and the development work under the Four-Year Plan.

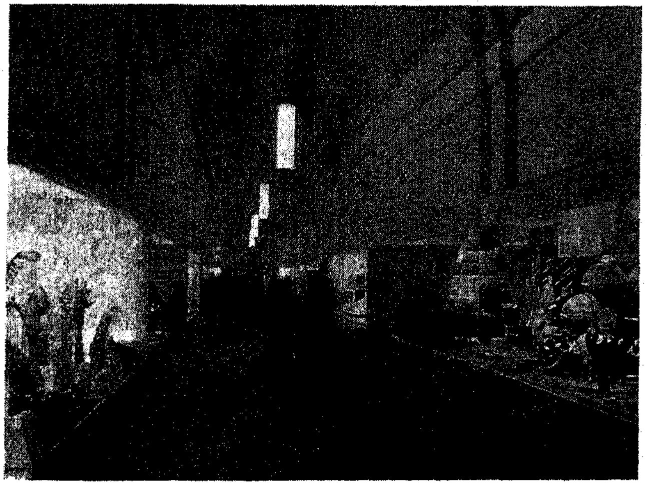
Other Countries.—The rest of the world followed the general trend of slump up to 1932 and recovery up to 1937. In most cases, foreign trade is governed by the demand for primary products, which form the staple exports of such countries as the British Dominions and the South American republics. The recovery in primary products from 1932 to 1937 increased first these countries' export trade and then their ability to import. Similarly, the setback in commodity prices during the last half of 1937 has already begun to affect certain South American countries, while the fall in wool must be affecting Australia after her previous good years. Still, taking a general view, world trade was, at the end of 1937, much better than in 1932. (N. E. C.)

F

FACTORIES ACT : *see* LEGISLATION, INDUSTRIAL.

FAIRS AND EXHIBITIONS. The Empire Exhibition of South Africa, at Johannesburg, closed on Jan 15, 1937. A few of the buildings, including the government pavilion of the Union of South Africa and the Tower of Light, were left standing, but the remainder were demolished. The following statistics relating to the exhibition are as supplied by the Empire Exhibition press bureau : number of visitors, 1,970,000 ; number of private exhibitors in addition to official and government exhibitors, 500 ; approximate value of goods on exhibit, £2 millions, including £300,000 worth of diamonds, £300,000 worth of postage stamps, £100,000 worth of pictures, and the Canadian exhibit worth £500,000 ; total deficit shown by the exhibition £470,000, the whole of which was ultimately taken over by the government of the Union, the railways and harbours, the municipality of Johannesburg and other big towns, and the chamber of mines.

On May 24, 1937, M. Lebrun, the president of the French republic, opened the Paris International Exhibition. The preparations for the exhibition were not at that time complete, having been delayed by a series of strikes and labour disputes. In addition to pavilions representing the national life of various countries, there was a ' Palace of Modern Art ', a ' Palace of Discovery ', and a ' town ' representing the architectural styles of the different French provinces. The exhibition was visited by the Duke and Duchess of Kent on Sept. 15, and by the Duke and Duchess of Windsor on Oct. 1. On Oct. 28 the International Exhibition Bureau, composed of representatives of 23 nations, agreed to grant the French government's request for authorization to reopen the exhibition in 1938. Regret at this decision was, however, expressed on Nov. 10 by the executive committee of the Federation of British Industries, on the ground that it would react prejudicially upon the Empire Exhibition to be opened in Glasgow in 1938 ; and the committee decided not to reopen the British pavilion. On Dec. 16, in a statement on the financial results of the exhibition, M. Joseph Caillaux, president of the Paris Exhibition Commission, reported that expenses had been frs.1,443,900,000 and receipts frs.150,700,000 ; the resulting deficit of frs.1,293,200,000 being reduced by various subsidies to frs.480 millions. M. Caillaux attributed the deficit to failures in directive planning as well as to the delays caused by labour troubles. Nevertheless, the chamber of deputies, on Dec. 23, approved by 337 votes to 260 the Bill to reopen the exhibition in 1938 ; but this decision was reversed by the senate on Dec. 31 by 224 votes to 73.



Sims Photo]

TEXTILES SECTION OF THE BRITISH INDUSTRIES FAIR, LONDON, 1937

Architecture Illustrated]

THE NEW EXHIBITION BUILDING AT EARL'S COURT, LONDON, COMPLETED IN 1937

The annual British Industries Fair was held from Feb. 15 to 26 in London (at Olympia and the White City) and Birmingham, and its success exceeded that of all its predecessors. There were 1,578 exhibitors in London, and about 1,000 at Birmingham. The total number of visitors was 375,386 (an increase of 10,220 over the 1936 figures), of whom 222,737 visited the London sections and 152,649 the Birmingham section. There was a particularly noticeable rise in the sales effected by exhibitors from empire countries.

The New York World's Fair of 1939 will celebrate the 150th anniversary of Washington's inauguration as first president of the United States. The administration building, erected in 124 days at a cost of $900,000, and occupied on Aug. 16, 1937, by a headquarters staff of about 700 persons, is situated outside the central exhibition area, and so is easily accessible to business callers and staff members. Other buildings completed in 1937 were the communications pavilion, the business administration pavilion, the home center pavilion, the medicine and public health pavilion, and two means of production display halls.

The Empire Exhibition to be held in Bellahouston Park, Glasgow, from May to October 1938 will be the biggest such exhibition since the British Empire Exhibition at Wembley in 1924. The adjoining Ibrox Stadium will be used for sports, etc. By the end of 1937, the 300-ft. steel tower was approaching completion, and was already a landmark visible for miles around. The construction of the main avenues was also well advanced, and in connexion with these an interesting experiment in the prevention of sun-glare is being made by means of embedding white and pink granite chips in the surface of red asphalt. Another noteworthy management of colour will be seen in many of the buildings, the white exteriors of which are to be tinged with a very faint blue, giving an effect of milk-colour. A guarantee fund of nearly £750,000 backs the exhibition, which is organized on a non-profit basis. It is estimated that the total cost of the exhibition will be in the neighbourhood of £10 millions, covering not only the planning of the site and the erection and equipment of buildings, but also the installation of public services capable of supplying the needs of what will be the equivalent of a city of 500,000 inhabitants.

FALKLAND ISLANDS, a group in the South Atlantic (*see Ency. Brit.*, vol. 9, pp. 51–53); a British Crown Colony since 1833, the claim of ownership by the Argentine government not having been recognized by Great Britain or the League of Nations. Area, 4,600 sq.m.; population (est. 1935, including South Georgia), 3,180. The chief town is Stanley, in East Falkland (population, 1,200). South Georgia, the South Shetlands, South Orkneys, Graham's Land, and other British islands in the neighbourhood, are dependencies of the Falklands. Sheep-farming is the principal industry, and whaling is extensively engaged in. The 1935 revenue was £49,800 and the expenditure £59,800; exports were valued at £124,300, and imports at £100,800.

FARMERS' CO-OPERATIVES. Ten leading countries of the world have 40,868 farmers' co-operative associations engaged in marketing farm products or buying farm supplies. France has 16,823, with 847,686 members. In the United States, latest estimates by the Farm Credit Administration place the number at 10,500. Of those in the United States, 8,388 marketing associations had 2,710,000 members and an annual business of $1,586 millions; 2,112 purchasing associations had 950,000 members and an annual business of $254 millions. In Canada, the official directory lists 779 marketing and 514 purchasing associations. In both countries, however, some organizations perform both services. Latest available figures give 1,090 as the number of farm co-operatives in Great Britain with 150,016 members and an annual business of nearly £11 millions. Denmark, long outstanding, has 5,182 associations with 590,853 members and annual business of £5 millions among a farm population of about 2 millions. In Canada and the United States, there is approximately one co-operative member to every two farms. This does not mean every second farmer is a member, for often one farmer may belong to several associations. Switzerland has 6,136 associations with 362,927 members and £4 millions annual business; Czechoslovakia, 5,376 with 597,079 members, and £17 millions annual business; Finland, 1,562 with 366,134 members, and £12 millions; Sweden, 1,541, with 395,474 members, and nearly £7 millions; Norway, 1,363, with 204,356 members, and £7 millions. Germany, Italy, and Russia are not included, because they present no comparable figures of free, co-operative enterprise. In the United States. there are 3,010 grain, 2,270 dairy, 1,063 fruit and vegetables, 1,040 live stock, 311 cotton, 154 poultry, 114 wool-marketing associations.

FARM INCOME. In England and Wales no regular estimates of farm income are made, but there is an annual estimate of the total value of the agricultural output, including all produce sold from the farming community to the rest of the community, and all food grown and consumed by farm households, but excluding inter-farm sales of feeding-stuffs, livestock, etc. The latest figures are:

	1935/36	Average 1930/31–1934/35
Total Agricultural Output .	£208,165,000	£197,680,000

The rise in the last few years has been due partly to the general rise in agricultural prices, and partly to an increase in the volume of the output.

As regards *net* income, the only relevant pieces of information of year-to-year changes are the index of agricultural prices on the one hand and the indices of wages, feeding-stuffs, and fertilizers on the other, which represent the chief items of farm expenditure, apart from rents, about which little is known.

INDEX NUMBERS OF PRICES (1911–13 = 100)

	Agricultural Produce		Wages	Feeding-stuffs	Fertilizers
1931–35 .	114	117 *	173	88	90
1936 .	122	125 *	179	93	88
1937 .	132	136 *	183	116	97·5

* Including subsidy payments.

It will be seen that, during the last two years, prices of produce have risen more rapidly than the level of wages, and on general grounds there is reason to believe that farmers are more prosperous than for many years. This improvement is substantiated by the detailed analysis of farm accounts made in certain parts of the country; in the eastern counties, in Wales, and in Scotland. In each case farm income and interest earned on farm capital are higher than at any time since 1929.

United States.—For the fifth successive year farm income in the U.S.A. advanced in 1937.

	Farm Income from Products	Government Subsidies *	Total
	Million dollars		
1929 .	—	—	10,479
1936 .	7,578	287	7,865
1937 .	8,575	400	8,975

* From agricultural conservation programme, etc.

The 1937 income was almost double that received in 1932, the lowest point of the depression. Moreover, the 1937 income was worth in purchasing power almost as much as the record farm income of 1929, since the prices of the things the farmer buys have not recovered proportionately.

INDEX OF PRICES PAID BY FARMERS
1924–29 = 100

1929	99
1932	69
1937	86

These figures, moreover, do not include the substantial reductions which have been made both in the principal and interest of farm mortgages, either voluntarily or with legislative assistance. There are, however, more people on farms now than in 1929, which partly offsets the apparently high buying power of the 1937 income.

Other Countries.—In Canada, the benefit of reasonably good wheat prices was largely lost through crop failure. In Australia and New Zealand farm incomes improved substantially during 1937, in Australia owing to the general rise in the prices of wheat, meat, butter, eggs, and fruit, and in New Zealand owing as well to the system of guaranteed prices to dairy farmers.

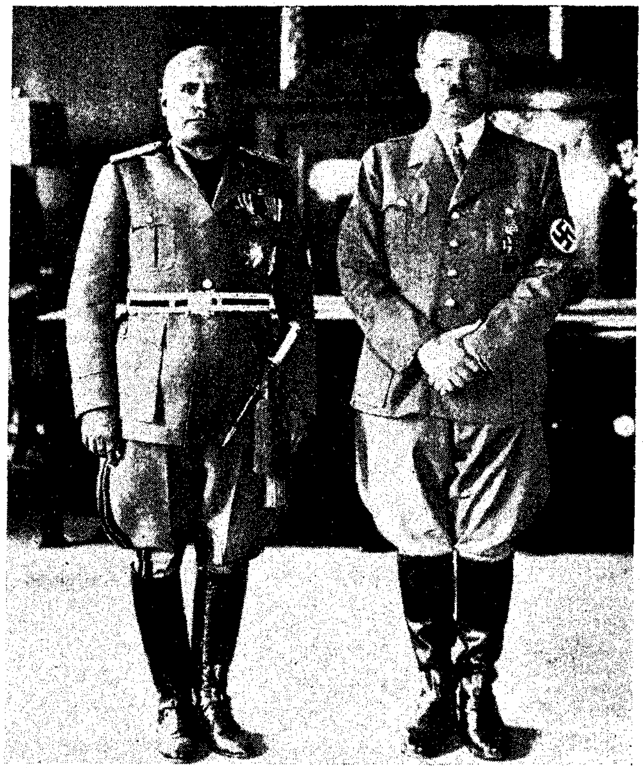
On the continent of Europe farm costs of production in many countries rose faster than the prices of farm products, and the value of farm income declined—particularly in France and Germany. (P. L. Y.)

FAROUK I (1920–), King of Egypt, only son and eldest child of King Fuad I; born at Cairo on Feb. 11, 1920; succeeded his father on April 30, 1936. In 1935, as H.R.H. Prince Said, he was sent to England to complete his studies. He represented his country at the funeral of King George V; but his father's death prevented his proceeding to the Royal Military Academy, Woolwich, and he returned to Egypt, a regency council acting for him until his coming of age on July 29, 1937, when he was invested as king in the Parliament building, Cairo.

On Aug. 22, 1937, the king's engagement to Mlle Sasi Naz Zulficar, daughter of a judge of the Alexandria Mixed Appeal Court and granddaughter of a former prime minister, was announced, the wedding later being fixed for Jan. 20, 1938. Later in the year a constitutional crisis arose, partly through the king, against the advice of Nahas Pasha (*q.v.*), reappointing (Oct. 20) Aly Maher Pasha to his former office of chief of the royal cabinet, and partly owing to a disagreement between the king and his prime minister over the interpretation of the constitution with reference, especially, to the appointment and dismissal of ministers. Before the end of the year the crisis had come to a head, and on Dec. 30, Nahas Pasha was dismissed and a new cabinet appointed (*see* EGYPT: *Hist.*).

FASCISM. Fascism is a term derived from the Latin *fasces*—the bundle of birch rods, bound together by a red thong and containing an axe in the middle, which was carried by lictors before the higher Roman magistrates as a symbol of executive authority. In its modern Italian usage, by a natural extension, the term *fasci* signifies groups or bodies of men combined in a political organization. Since 1919 the term fascism has been particularly and specifically applied to the principles and organization of an Italian nationalist political party, founded and led by Signor Mussolini, which in Oct. 1922 assumed control of the government of Italy under the style of the *partito nazionale fascisto*. By an easy transference the term has also come to be applied to the principles and organization of similar parties in other countries. In its widest sense it thus designates any body of belief, backed by a party, which insists on national unity and executive authority, more particularly in opposition to communist principles and propaganda. In this sense it may include the National Socialism of modern Germany; but German National Socialism has its own peculiar features (for example, its cult of racial unity and its special emphasis on the principle of leadership), and in spite of its analogies with Fascism it may be classed as *sui generis*.

The principles of Italian Fascism, which may be taken as the type, begin in a strong sense of the need and the value of executive authority, and therefore in opposition to parliamentary democracy, with its supposed exaggeration of the authority of the legislature (and thus of the multiple parties which fill the legislature) at the expense of the executive. The basis of a single and powerful executive authority is sought in a single party, which permits no other parties by its side, which fills the legislature with its adherents, and which makes its leader and his associates the mainspring of the action of the State. The 'single-party system', as it may be called, is thus an essential element of Fascism. The inspiration of this single party is found in a deep conviction of the prior and supreme value of national unity, overriding party divisions, overriding the struggle of classes, overriding local particularism. The Italian Charter of Labour of 1927 (one of the great documents of the regime) accordingly asserts that the Italian nation is a higher organism, superior to all individuals and groups, which is integrally realized in the Fascist State—that is to say, in the government of the Italian State by the Fascist Party. On this basis, Fascism becomes 'totalitarian': in other words, it seeks to control the whole of the body politic, and the whole of its range of life—education, the use of leisure, production, and every activity—by the one principle of national unity and national power. On the other hand, and for the last dozen years, since the principle was first enunciated in 1926, Fascism is also 'corporative' and seeks to institute the corporative State. It believes that masters and men, in each branch of production, should be organized in a joint corporation or guild, and should regulate, through that guild, their mutual relations and their common effort of production. Meanwhile, in the field of external relations, Fascism has steadily emphasized the principle of national power: it has promoted national expansion in Abyssinia; it has recently put much of the national industry on a war footing; and it has also asserted the idea of national self-determination by seceding from the League of Nations.



Wide World Photos]

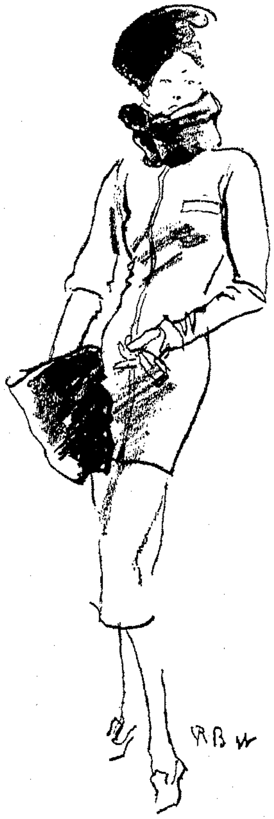
SIGNOR MUSSOLINI AND HERR HITLER PHOTOGRAPHED DURING THE FORMER'S VISIT TO GERMANY, SEPTEMBER 1937

In its organization Fascism has been true to its principles. At its centre stands the Grand Council of the Fascist Party, under the presidency of the Duce. The party itself includes about two million regular members; and there is also a party militia of about 200,000. The head of the party is also the head of the government, or prime minister; his office is permanent, and his power ubiquitous. The chamber of deputies, under the law of 1928, is recruited from the

Fascist Party; but by its side, and apparently as its destined successor, there has stood for the last eight years a national council of corporations. It was not, however, until 1934 that actual 'corporations' were instituted in the various branches of production; but since that year there have been 22 corporations at work. The 'syndicates' (federations of employers and trade unions of workers) which join to form these corporations or guilds are bodies recognized and regulated by the government; and all in all, in its organization, Fascist Italy is a highly unified national State, held together under the control of a single party, and bound together by a single and vigorous discipline.

The principles of Fascism are set out in Signor Mussolini's article on *The Fascist Doctrine*, the bulk of which has been published in an English translation by the Hogarth Press. Dr. Finer's work on *Mussolini's Italy* gives a full account of the Fascist State from a liberal point of view; and there is also a brief account in M. Parmelee's *Bolshevism, Fascism, and the Liberal-Democratic State.* (E. B.)

FASHION AND DRESS. It would have been strange if, in a year so marked by change throughout the world, fashions too had not shown a restless vacillation. For modes and manners never fail to reflect the temper of the times. The two fundamentals of feminine dress are shape, or silhouette, and skirt-lengths. So basic are these aspects of women's clothes that invariably, when they alter, they do so gradually. Usually it takes at least five years of careful development to change the underlying structure of clothes. Yet, when 1937 dawned, the woman of fashion throughout the world showed the exaggerated shape she had been content to assume for several years preceding; but, as 1937 faded into history over the horizon, she stood silhouetted in a completely new outline—easy and natural.



Condé Nash Publications]

GRADUALLY THE WAIST-LINE GROWS LOWER, THE SILHOUETTE LESS FITTED AND MORE TUBE-LIKE. THIS IS THE MOST SIGNIFICANT FASHION DEVELOPMENT OF 1937, TYPIFIED HERE IN A MOLYNEUX SUIT

The 1937 silhouette is illustrated herewith. It is tubular in form, and follows fairly faithfully the natural contours of the feminine figure, except that it indicates the waist at a point slightly lower than normal. The silhouette of previous years was almost hour-glass in form, marked by padded, exaggeratedly wide shoulders, and a small, high waist.

Not content with changing one dress fundamental, the silhouette, 1937 also toyed with the other, and tried to alter evening hemlines. Full-cut ankle-length evening dresses were proffered in February of 1937. Probably this was a natural outgrowth of the universal enthusiasm for ballet. For the few months succeeding the introduction of the ankle-length evening skirt, various other compromise suggestions, such as evening skirts that were short in front but long in the back, were made to persuade fashionable women away from the floor-length evening skirts they had been wearing for years. But the smart woman, after a half-hearted attempt to follow the designers' lead, finally rejected any change from the even floor-length skirt she has so persistently preferred to wear by night.

To sum up, then, 1937 definitely achieved a change in silhouette. It tried and failed to alter evening skirts from long to short. But it is a significant fact that, for the first time in fashion history, a single year has seen the development of two such major moves. Does it mean that in a modern world, where nothing is permanent but change, fashions too will come and go, at an accelerated pace?

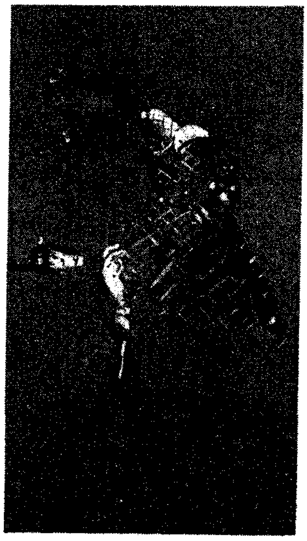
Let us now look at the minor manoeuvres of fashion in 1937. The following things stand out:

Furs are no longer a question of seasons. For some years they have sought, and finally in 1937 secured, a place in the year-round wardrobe of the fashionable woman. A rising popularity for long-haired furs such as blue fox has brought about in 1937 a new type of fur coat, which is bulky, chunky, even almost clumsy, in appearance.

Jewels.—Persistently and patiently for several years, these have been growing imaginative and immense. Daintiness is a word that has fallen into disuse so far as jewellery is concerned. Intrinsic value is relatively unimportant. The great success of the year was a pair of clips made by Cartier, in gold, enamel, and diamonds, to represent two blackamoors' heads. These were swiftly copied at popular prices, and swept the fashionable world, to die an early and an inevitable death.

Fabrics.—A trend that has, for some time, been growing and finally, in 1937, achieved the status of an accepted fact, is that wool fabrics are now worn for evening. No longer does the convention of wool for day only, silk for evening, hold good, though silks remain overwhelmingly the preference for formal frocks. One specific fabric alone stands out as a major success in the 1937 fashion review. This is silk jersey. Launched four years ago, it was not until the autumn of 1937 that it was generally worn.

Colours do not change. In spite of fashion propaganda, all smart women the world over prefer black. Autumn always ushers in browns, greens, and wine colours, with only subtle variations in shade from year to year. Spring always means navy blue, no matter what the fine differences of tone from season to season. White followed by pastels is always, saving black, the preference for evening. So, in 1937, there was no dramatic change in fashionable colours. Only one new colour arrived; it is 'Shocking Pink', introduced by Schiaparelli in Feb. 1937, then taken up by other designers, with the result that the vanguard of fashionable women everywhere are now seen wearing this crude, cruel shade of rose.



Condé Nash Publications]

TALBOTS' VEIL FALLS COMET-LIKE FROM A STRAW POSTILION HAT

Hats.—These change so swiftly that it is hardly safe to record them. The only millinery mode that came to stay in 1937 was the return of veils. (E. Pe.)

FEDERAL BUREAU OF INVESTIGATION, THE, of the United States Department of Justice is charged with the duty of investigating violations of the laws of the United States, collecting evidence in cases in which the United States is or may be a party in interest, and performing other duties imposed upon it by law. The organization was established in 1908 by Attorney-General Charles J. Bonaparte. The White Slave Traffic Act passed in 1910, and the National Motor Vehicle Theft Act of 1919 both increased and extended the activity of the Federal Bureau of Investigation.

In 1924, Mr. J. Edgar Hoover was appointed director, and in that year the identification division was started with an initial collection of 810,188 fingerprint records.

A series of Federal crime bills was passed by Congress in 1934, placing additional work on the FBI. These included the Federal Extortion Act, the Federal Anti-Racketeering Statute, the rendering unlawful of flight to avoid prosecution, amendment to the Federal Kidnapping Act, and the grant of power of arrest for special agents of the FBI, and authority to carry firearms.

During the 1937 fiscal year, 4,624 convictions were secured in cases wherein special agents of the Federal Bureau of Investigation performed investigative work. The sentences imposed on these subjects totalled 2 death, 13 life, and terms of imprisonment amounting to 13,322 years and 11 months, while the total value of recoveries effected, fines imposed, and savings to the government in cases investigated during this period amounted to $41,438,370. The expense of operating the bureau during the fiscal year 1937 was $5,815,598. Convictions were secured of 94·67 per cent. of all persons investigated by the bureau who were brought to trial. During the year, 2,635 stolen motor vehicles valued at $1,157,947.81 were recovered in National Motor Vehicle Theft Act cases wherein the bureau performed investigative work. Since the enactment of this Act in Oct. 1919, a total of 44,756 stolen motor vehicles valued at $27,201,463.54 has been recovered.

During the fiscal year 1937, 1,303 Federal fugitives from justice were located by special agents of the Federal Bureau of Investigation in various parts of the country. In addition, 6,223 fugitives from justice were located through the efforts of the fingerprint division of the bureau.

On July 1, 1937, there were 7,360,458 sets of fingerprint records on file in the identification division of the Federal Bureau of Investigation. A total of 1,382,666 fingerprint records was received during the fiscal year, and identifications were effected in 54·4 per cent. of the criminal fingerprints received. (J. E. H.)

FEDERAL CAPITAL TERRITORY (Australia), containing Canberra, seat of the Commonwealth government, is administered under the Commonwealth ministry of the interior, and includes 28sq.m. at Jervis Bay for a possible port. Area, 940sq.m.; pop. (1933), 8,947; number of sheep (1935), 219,000. Canberra is linked with the New South Wales railway system by line to Queanbeyan (4¾m.). The transfer to Canberra of the staffs of the defence and postmaster-general's departments was proceeded with in 1937. The Staff College was retransferred to Duntroon (Canberra). Works advanced included the erection of a main administrative block, a new hospital, a high school, housing, and extensions of the water supply and sewerage systems. Finance, 1934–35: receipts, £496,575; capital expenditure, £233,315; other expenditure, £820,819.

FEDERAL LEGISLATION. It has been said of the first session of the 75th Congress that 'Its most notable contribution to history was the rejection by the senate of President Roosevelt's plan for the reorganization of the Supreme Court'. One may also include the special sessions at the end of the year, and conclude that the congressional sessions of 1937 were distinctive by reason of the number and the importance of the measures proposed by the president which were rejected. Important measures which were defeated included, not only the court reorganization plan, but also proposals to reorganize the executive branch, to set maximum hours and minimum wages for all employees of concerns engaged in inter-State commerce, to control agricultural production, and to extend the TVA principle to other portions of the country.

Important as were each of these measures in content, they were more important in number, for they measured the depth of the congressional tide which for the first time since 1932 was beginning to run against the president. The president proposed 13 major bills, of which Congress defeated six, partially agreed on two, and enacted but five in substantially the form in which they had been introduced. Various explanations of this unexpected rebellion have been offered. Chief among them were returning prosperity, the second-term tradition that the president loses legislative power with members of Congress, since he will not again run for office, and the crystallization of new political groups within the old parties. Post-session analyses agree that the true explanation lies probably in a combination of these possibilities. Secondary to these basic considerations is the fact that the failure of the president's programme was due to recalcitrant elements within his own party rather than to the tiny Republican contingent in Congress. A good illustration is the Supreme Court Bill against which every Republican senator voted but none spoke. The opposition was more between southern social and economic conservatism on the one hand and northern metropolitan liberalism on the other than between Republican and Democrat.

First to be considered must be the congressional effort to postpone the date of the reconsideration of some fundamental problems by means of the extension of the date of expiration of several of the emergency measures adopted in the first Roosevelt administration. Included in these extensions were the Civilian Conservation Corps for three years, the Reconstruction Finance Corporation, and the president's control of the monetary stabilization fund and the gold content of the dollar for two years, and the Soil Conservation Act for four years.

A sugar quota act, passed in the closing days of the session, provided for the annual determination by the secretary of agriculture of the amount of sugar required by consumers in the United States, an allotment of 55·59 per cent. to domestic producers and 44·41 per cent. to foreign producers. The secretary is also empowered to make individual allotments whenever marketing conditions, a stable supply, or justice among the producers within given areas may require. All sugar of domestic manufacture is subject to a graduated excise tax. Further agricultural legislation took shape in a Farm Tenancy Act, which authorizes the secretary of agriculture to make long-term loans to tenant farmers for the purchase of farms. Provision is made for loan appropriations of $10 millions for the first year and $50 millions for 1940 and each year thereafter. An important provision of the act requires the recipients to employ farm practices specified by the secretary. Of equal long-run significance is the authorization of the conduct of a programme of land conservation and utilization, including the retirement of submarginal lands. To administer its provisions the act creates a new agency in the department of agriculture to be known as the Farmers' Home Corporation.

Chief among New Deal concerns in the last session was the housing problem, and from it grew the most important legislation of the session. The act creates a United States housing authority in the Interior department which is authorized to issue $500 millions of government-guaranteed securities to finance loans to public housing agencies. The loans may not exceed 90 per cent. of the project cost, nor may the annual subsidies for which provision is made exceed 80 per cent. of the total contributed by national and local agencies.

Students of American Federal government have been interested in recent years in the increased use of the inter-State compact as a method of coping with essentially regional problems. Seven such compacts received congressional consent during the last session. These compacts related to conditions of employment, the conservation of gas and oil, water pollution and other major problems, in sharp contrast to the inter-State compacts of the past, which have usually been limited to minor matters such as boundaries and bridges. Congress adopted but a small proportion of the reforms of the American judical system which were urged upon it. The first measure to be enacted was that which permitted Supreme Court justices to retire on full pay once they had reached the age of 70 and had served for 10 years.

The Guffey-Vinson Act created a Federal Bituminous Coal Commission in the Interior department with broad powers to deal with such problems as price-fixing, marketing, and the regulation of business practices. Unlike the act of 1935, which the Supreme Court had invalidated, this act provided for labour only to the extent of asserting the right of employees to bargain collectively. Producers failing to become code members are subjected to a tax of 19·5 per cent. of the sale price of the coal.

The Neutrality Act of 1937 extends the provisions of the act of 1935 for two years, and also empowers the president to prohibit the carrying of articles to warring nations, and to require ' cash and carry ' purchasing by all belligerents. The arming of American merchant vessels is specifically prohibited, as is also the travel of American nationals on the vessels of belligerents.

A Railroad Retirement Act was passed which provides for voluntary retirement at the age of 65 or at 60 if the employee has been in the service for 30 years or more. The pension system is to be administered by a Railroad Retirement Board, on which labour, management, and the general public are to be individually represented.

A relief appropriation bill proposed by the president successfully weathered a bitter congressional storm. It appropriated $1,500 millions, precisely the amount which the president had requested. A tax-evasion study undertaken by the Bureau of Internal Revenue led to the passage of a ' Tax Loophole ' Act which sought to put an end to the ingenious tax evasion practices centring about the use of both domestic and foreign personal holding companies and deductions for losses from sales or exchanges of property, etc. (*See* also UNITED STATES: *Congress*.)

FEDERAL RESERVE SYSTEM. Monetary conditions and policies in the United States of America in 1937 were the outcome of developments during the preceding five years. An active policy of monetary ease has been followed by the Federal Reserve System since the spring of 1932. The System increased its holdings of government securities during 1932–33 from $800 millions to $2,400 millions. As a result, member banks were able to retire practically all of their indebtedness at the Federal Reserve Banks, and in addition accumulated by the end of 1933 about $800 millions of excess reserves. Following the passage of the Gold Reserve Act in Jan. 1934, and the subsequent reduction of the gold content of the dollar, gold flowed into the United States in large volume, and bank reserves were greatly increased. Excess reserves rose by the end of 1935 to over $3,000 millions and continued at close to this level during the first half of 1936. In July 1936, the board of governors acted to increase reserve requirements by 50 per cent., this absorbing about $1,500 millions of these excess reserves.

In Dec. 1936, the United States Treasury, after consultation with the board of governors, adopted a policy of placing additions to the gold stock in an inactive gold account, so that member bank reserves were no longer subject to expansion from this source. At the end of Jan. 1937, the board of governors announced a second and final action to absorb excess reserves by increasing reserve requirements to the full extent authorized by law. One-half of this increase became effective on March 1 and the other half on May 1, 1937. After the final action took effect on May 1, excess reserves of member banks were still approximately $900 millions and were widely distributed among all classes of member banks. The board stated, in announcing final action, that it was a precautionary step which would place the Federal Reserve System once more in a position where it could rely upon its traditional and more flexible monetary instruments of open-market and rate policy for easing or tightening credit conditions as changing circumstances might require.

At the turn of the year 1936–37, the previous prolonged advance in high-grade bond prices ceased, and early in 1937 there was a decline, due to a number of factors, including possibilities of an inflationary development. Bond prices in England had already begun to decline. There had also been an overloading of the new issues market, with offerings of bonds bearing exceptionally low coupon rates, and some of these were overhanging the market. Prices of high-grade municipal and corporate bonds had declined for some weeks before there was a marked decline in U.S. government obligations. Under these conditions banks and other investors with substantial paper profits on their bond holdings began to sell in order to realize these profits. After prices began to decline, others sold to avoid losses. A few large money-market banks in making adjustments in their reserve positions to meet increased reserve requirements also contributed to this movement.

Because of development of disorderly conditions in the bond market in March, and in accordance with the purpose of relying upon open-market operations for meeting changing credit conditions, the System through the Open Market Committee at first purchased government securities of longer maturities that showed weakness and disposed of securities of shorter maturities, without changing the total holdings in the open-market account. This was followed by the outright purchase of $96 millions of government securities in the open market, which were added to the account. Conditions in the open market became steady early in April, and the decline in government security prices ceased.

Throughout the year banks had sufficient funds to care easily for credit needs of business. In August it appeared, however, that during the autumn the usual seasonal demands for currency and credit might result in tighter credit conditions which might lead to further liquidation of assets. Prices of stocks and of basic commodities, moreover, were showing further declines, and evidences of weaknesses in the business situation were becoming increasingly apparent. Therefore during August and the early days of September the Federal Reserve Banks reduced their discount rates. After these changes were made the rate at the Federal Reserve Bank of New York was 1 per cent., the lowest central bank rate in history, and at the other Federal Reserve Banks 1½ per cent. The board also issued in September a revised and liberalized Regulation A, relating to advances and discounts by Federal Reserve Banks for member banks, in accordance with changes in the law made by the Banking Act of 1935.

In September, at the request of the board of governors, the Treasury released $300 millions of gold from its inactive account, and at the same time the Reserve System announced that it would be prepared to buy additional government securities in order that seasonal demands for currency and credit would not have the effect of tightening credit conditions. The release of gold was made by the Treasury about the middle of September, and the proceeds were immediately expended. The additional reserves thus provided went mostly to banks in New York City and in Chicago, which generally bear the brunt of seasonal increases in credit demands.

In November, in anticipation of holiday currency demands, the Federal Reserve System purchased $38 millions of government securities in the market. Partly because of action taken by the Treasury and the Reserve System, and partly because the seasonal credit and currency demands were smaller than usual, owing to the recession in business that developed, member banks were able to meet the seasonal demands without pressure on their reserves.

In October, the board of governors reduced margins required on security loans both by banks and by brokers from 55 to 40 per cent. The higher margins had been imposed early in 1936 at a time when security prices were rapidly advancing and security loans were increasing. The fact that the margins had been high had resulted in a smaller amount of margin calls and less forced liquidation, when security prices declined, than would otherwise have been the case. When the decline in security values continued, because of a change in the business outlook, the board eased conditions for the purchase of securities by a reduction in the required margins.

Credit conditions continued to be extremely easy. Excess reserves of member banks averaged over £1,000 millions during the last three months of 1937, an ample amount to meet all current and prospective demands for credit. Private and institutional investors also held a large volume of idle funds. Short-term money rates and customers' rates of banks in leading cities were close to their all-time lows. Yields on long-term government securities and on high-grade municipal and corporate bonds, which had increased during the first part of the year, declined later, and at the end of the year were exceptionally low in relation to levels prevailing prior to 1936. Monetary and credit conditions at the close of the year continued to be favourable for encouragement of business activity and general economic recovery. (M. C. E.)

FEDERAL THEATRE, a project of the United States Works Progress Administration, organized under the Emergency Relief Appropriation Act of 1935 to give employment to needy professional theatre people. Payment at a security wage is less than the prevailing pay for corresponding work in industry, but adjusted, through hours, to meet that wage. Nine out of ten employed come from relief rolls. Nine dollars out of ten must be spent on wages, leaving only one dollar out of ten to meet all theatrical and operating costs.

At the outset of the programme, 12,700 people were employed in 29 States. Employment in Jan. 1938 was 8,905 in 20 States. Directors and designers have consistently offered an ambitious programme of classical and modern plays, dance dramas, marionette shows, musical comedies, children's plays, and cycles by such distinguished dramatists as Eugene O'Neill and Bernard Shaw.

The Federal Theatre has invented the technique of the 'Living Newspaper', a terse cinematic type of production dealing with such social and economic subjects as agriculture, power, flood control, and housing. Through its playwriting and research divisions the Federal Theatre is conducting experiments in the fields of writing, design, and light. It also provides script and advisory and publication service for great numbers of community theatre groups.

FENCING. Fencing has passed through a momentous year, important moves having been made in connexion with the sport. A recent census, the first ever taken, showed that there are now something like 3,500 fencing enthusiasts in Great Britain.

There has also been what practically amounts to a complete reorganization. This has included the formation of various sub-committees of the committee of the Amateur Fencing Association, and the formation of a North and Midlands Section, with headquarters at Birmingham.

Another important item has been the adoption of a new edition of the Rules of Fencing, derived from a translation of the International Rules. The publication *World Sports* has been adopted as the official organ of the A.F.A., and a quarterly news bulletin is now issued to all affiliated clubs. It is hoped, by means of these changes and innovations, to put fencing in Great Britain on a thoroughly organized and common basis. The effort in this direction was given

Sport and General]

FENCING. THE AMATEUR FOIL CHAMPIONSHIP OF GREAT BRITAIN. J. EMRYS LLOYD (WINNER) AND C. R. HAMMERSLEY timely encouragement when the association received royal patronage for the first time.

A full team was sent to the world championships in Paris, but the results did not quite fulfil expectations. The London Fencing Club in 1937 established a precedent by 'housing' the winners of the three major championships: J. Emrys Lloyd won the foil championship, C-L. de Beaumont the épée championship, and R. F. Tredgold the sabre championship. The Miller-Hallet International Épée Cup was won by J. Bruneau, of Belgium.

Fencing has many enthusiastic followers in the United States of America. The chief governing body is the Amateur Fencers League of America, headquarters in New York, having 971 members in 18 divisions scattered throughout the country; there are also about a dozen more fencing leagues of lesser importance. The national rankings for 1937 in the league were: foil, Joseph L. Levis, José R. de Capriles, and Dernell Every; épée, Lieut. Thos. J. Sands, Tracy Jaeckel, and Andrew Boyd; sabre, John R. Huffman, Normal Č. Armitage, and José R. de Capriles; women's foil, Helene Mayor, Carol Alessandroni, and Dolly Funke.

FERNANDO PO: *see* Spanish West Africa.

FERTILIZERS. The use of commercial fertilizers in world agriculture shows notable and persistent increase. A recent study, covering 40 years, of 14 great wheat-growing regions shows that the trend of yield is upward in all regions where fertilizer application is standard practice, and downward in all others. For example, it is upward in western Europe, downward in south-eastern Europe; upward in Australia, downward in South America; upward in eastern United States, and downward in the prairie provinces of Canada and the prairie States south of them. Other great crops, notably cotton, show like trends.

Fourteen elements are held essential to plant growth. These are: nitrogen, phosphorus, potassium, calcium, carbon, hydrogen, oxygen, magnesium, iron, sulphur, manganese, boron, copper, and zinc. The carriers of nitrogen, phosphorus, and potassium are considered the most indispensable ingredients in commercial fertilizers, because most farm soils are deficient in these elements. Likewise, crops remove them, and calcium, in larger quantities than the other ten. Carbon, hydrogen, and oxygen are obtained by plants from air and water. With continued cropping it has become progressively apparent that certain soils are deficient in one or more of the remaining seven elements, now commonly referred to as the minor or trace elements. As a rule, it is necessary to add only relatively small amounts of the deficient elements.

Many symptoms in growing plants that had been considered due to some disease or fungus growth were found to be caused by lack of one of the minor elements. Magnesium deficiency causes the condition known as 'sand drown' in tobacco; manganese deficiency causes chlorosis in tomatoes and other crops; boron deficiency causes 'black heart' in mangels and sugar beets, and 'cracked stem' in celery; while zinc deficiency causes 'mottle leaf' of citrus trees.

Of recent years much progress has been made in determining the best methods of application and placement for numerous crops. Generally speaking, the closer the fertilizers can be put to the seed without damaging germination, the better the results. Outstanding manufacturing developments are: treatment of superphosphate with anhydrous or aqua ammonia, fixing the ammonia in the form of an ammonium phosphate; continuous processes for the manufacture of superphosphate, supplanting the old intermittent or batching processes; and granulation of fertilizers and fertilizer materials.

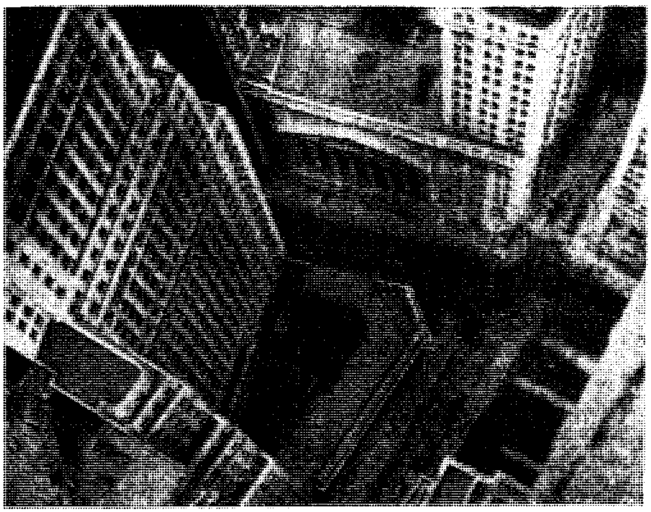
World consumption of pure nitrogen in agriculture was 1,460,000 metric tons for the year ended June 30, 1928, as compared with 2,344,000 tons 10 years later. World production of superphosphate was 14,065,000 metric tons in 1927, and 15,622,000 tons in 1936. World production of potash was 1,997,000 tons of K_2O in 1927, and 2,402,000 tons in 1936. *See* also Potash.

FIJI, a Crown Colony of the British Empire. Governor, Sir Arthur Richards, K.C.M.G., who is also high commissioner for the western Pacific. It comprises some 250 islands (about 80 inhabited) between lat. 15° S. and 22° S. and long. 177° E. and 178° W. Total area, 7,083sq.m.; pop. (census, April 1936): Europeans, 4,028; Fijians, 97,651; Indians, 85,002; others, 11,698; total 198,379. Capital, Suva; pop. (1936), 15,522; regular port of call for mail shipping between New Zealand and North America. Finance (1936): revenue, £796,630; expenditure, £677,152. Trade (1936): imports, £1,501,854 (from U.K., £526,690); exports, £2,135,427 (to U.K., £842,874). A new constitution was introduced in 1937: the Legislative Council now consists of the governor, 16 official members, 5 Europeans (3 elected on a communal franchise, 2 nominated), 5 Fijians selected by the governor from a panel submitted by the Great Council of Chiefs, and 5 Indians (3 elected on a communal franchise, 2 nominated). The Executive Council consists of the governor, 5 chief civil servants, and 2 nominated unofficial members.

FILENE, EDWARD ALBERT, American merchant; born at Salem, Mass., Sept. 3, 1860; died in Paris, Sept. 26, 1937. He entered the Boston department store of William Filene's Sons, and eventually became its president. His interest in economic problems was evidenced by his establishment in 1919 of the Twentieth Century Fund, and by his championship of several advanced plans for economic re-adjustment. He was founder and president of the Credit Union National Extension Bureau which directs the organization of co-operative credit associations in the U.S.A. and Canada. After much study of the European situation and the problems of peace, he finally urged the voluntary surrender of raw material monopolies as a necessary step to avoid conflicts.

FINANCIAL REVIEW. The outstanding fact in the financial history of 1937 was the fall in commodity and share prices after a rapid rise in the first three or four months of the year. This fall of prices had important secondary reactions on international capital movements, exchange rates, public finances, rates of interest, etc. In Great Britain, wholesale prices (1929 = 100, *Economist* index) rose to 94·4 in March from a level of only 80·7 in Oct. 1936. By Nov. 1937, the index had dropped to 77·0. In the United States, the peak occurred later, with the index (Bureau of Labor, 1926 = 100) at 88·0 in April, and the fall was less marked, only five points being lost by mid-November. Statistical differences, however, largely vitiate such international comparisons. In fact, practically all raw commodities entering into world trade suffered a sharp fall of price after April 1937.

One striking consequence was a complete reversal of the trend in the international control of the supply of primary commodities. At the beginning of 1937, the authorities of most restriction schemes were relaxing and often releasing altogether their restraints on supply, in an anxious attempt to forestall shortages or speculative price inflation. Thus



Keystone]

FINANCIAL DISTRICT OF NEW YORK. LOOKING DOWN ON WALL STREET AND BROAD STREET AND SHOWING THE FAÇADE OF THE STOCK EXCHANGE

the International Tin Committee raised the permissible quota after the first quarter of the year to 110 per cent. of standard tonnages, an unattainable figure for most countries in the scheme. A series of attempts to overtake rising prices brought the rubber quota from 65 per cent. for the second half of 1936 to 90 per cent. for the second half of 1937. The copper committee temporarily removed all restriction in Jan. 1937, but reimposed it in November at the rate previously ruling. The rubber quota for the first quarter of 1938 was fixed at 70 per cent., and the tin quota was cut at one blow from 110 per cent. to 70 per cent. Yet the prices of all these commodities remained much lower than they had been at the beginning of 1937.

The causes of the fall in prices are relevant here only in so far as they had a financial character. Among the proximate causes was the so-called gold scare. The high price of gold established by currency devaluation attracted a rising output of the metal, whereas the monetary outlets for it were strictly limited. Between 1930 and 1936 world output of gold rose from 21 million ounces to 35 million ounces. By far the greater part of this gold found its way indirectly to the United States. At considerable cost to the American Treasury, most of it was sterilized, that is to say, not allowed to serve as a base for currency inflation. The American buying price of $35 a fine ounce was the only fixed pivot (bar the small Belgian market) in the relations between the principal currencies and gold. At the beginning of April 1937, the arrival in London of large consignments of gold from Russia was followed by rumours that the United States Treasury intended lowering its buying price. The rumours were promptly denied in Washington, but gold-mining shares and international securities remained depressed, and the disturbance began to spread to other security and commodity markets.

The reason for this extension was twofold. First, it was thought that, just as the high price for gold had been associated with rising commodity prices, so a reduction in the price for gold would somehow lead to a lower general price level. Secondly, there had been widespread speculation, both professional and public, in commodities as well as stocks and shares. When one speculative market sustained losses, these often had to be covered by liquidation in other markets. An illustration was the reaction in London to the National Defence Contribution (*q.v.*). This graduated company income-tax had no direct relation to commodity markets, yet it was followed by a recession there as well as on the stock exchange. The gold scare itself may similarly be regarded as a signal rather than a reason for the fall of commodity and stock prices (except, of course, those of gold shares). Speculative buying in earlier months had driven the prices of many commodities above the levels indicated by costs of production, rates of supply, and probable consuming power of industry or private consumers.

The gold scare was violently renewed at the end of May. Hoarded gold was flung on the London market, and the greater part of it found a buyer only in the Exchange Equalization Account (*q.v.*), which bought £4 millions of gold on June 4 alone. On that day President Roosevelt flatly denied that his government's policy had changed, and the scare gradually died down. Partly as a result of the strain put upon it by purchases of gold, which exceeded £92 millions net between March 30 and Sept. 30, the Exchange Equalization Account was raised by £200 millions to £575 millions. By November, the position had been completely reversed: gold commanded a premium in London against the parity with the dollar; hoarding had been renewed, and there were even rumours that the dollar might be further devalued.

Meanwhile, however, great changes had taken place in the structure of commodity and more especially stock market prices. On March 10, 1937, the price index of industrial common stocks on Wall Street (Standard Statistics Company, 1926 = 100) touched a peak of 155·7, compared with an average of 127 for the whole of 1936. In May, the average was down to 137, and after a series of oscillations the fall was renewed after August. On Nov. 24, the index dropped to 86·7. On the London market, though the fall began earlier, it was less severe. The ordinary shares index (*Financial News*, July 1, 1935 = 100) reached its peak of 124·8 on Jan. 4, and fell to 93·1 on Nov. 22. Both in London and in New York there was some recovery in the last few weeks of the year.

Although 1937 saw a certain depression of fixed-interest securities also (the yield on British 2½ per cent. Consols, for instance, rose during the year from £2 19*s.* to £3 7*s.*), this section of the market often showed strength when the more speculative sections were weak. The depression in industrial securities therefore seems to have been due to business apprehensions, and to the liquidation of speculative positions, rather than to any general financial stringency.

Indeed, easy monetary conditions continued throughout 1937. The New York Federal Reserve Bank, on Aug. 26, reduced its rediscount rate from 1½ to 1 per cent.—the lowest level ever established by any central banking institution. On Jan. 30, the Federal Reserve Board had announced increases in the reserve requirements for member banks, designed to immobilize some $1,500 millions of excess reserves which the Board regarded as superfluous for the needs of commerce, industry, or agriculture, and as capable of causing an injurious expansion of credit. Nevertheless, member bank excess reserves totalled $1,160 millions at the end of 1937, compared with $1,950 millions at the beginning of the year. The Bank of England discount rate remained at 2 per cent. throughout the year, and the market rate on Treasury bills was maintained above ½ per cent. only by dint of special arrangements between the money market and the banks, and among the money market operators themselves. The Netherlands and Swiss bank rates were likewise unchanged in 1937, at 2 per cent. and 1½ per cent. respectively. The Bank of France discount rate, which began the year at 2 per cent., was raised to 4 per cent. in January and to 6 per cent. in June in order to counter the external weakness of the franc. Thereafter, however, it was progressively reduced to 3 per cent.

The belief that the devaluation of 1936 would bring stability to the French franc and reverse the flow of capital from France was shattered in 1937. The economic reforms introduced by the Popular Front government, and the persistence of budget deficits, continued to frighten capitalists, while the competitive advantage for French trade was nullified by the rise of internal costs. The French exchange fund suffered heavy losses of gold, and neither the raising of the Bank of France discount rate nor the formation of a new government under M. Chautemps allayed anxieties. Indeed, these events stimulated rumours of an impending further cut in the gold value of the franc. By June, the exchange value was equivalent to the lower gold limit (corresponding to roughly 110 francs to the £) that had been prescribed by the post-devaluation monetary law.

The rumours caused a large discount to appear on the forward franc. On June 29, dealings in francs were suspended in London and New York; French financial markets were closed; and a Plenary Powers Bill passed the Finance Committee of the French Chamber, after an admission by M. Bonnet, the finance minister, that the government had only 20 million francs of ready money at its disposal, and that the outflow of gold since June 23 had totalled 2,500 million francs. On the following day, the Plenary Powers Bill passed into law, the limits on devaluation were repealed by decree, and the government announced that the franc would be left to find its own level, subject to the control of fluctuations by a stabilization fund.

When the markets were reopened on July 1, the franc was bought and sold at about 129 to the pound. The British Chancellor of the Exchequer and the Secretary of the United States Treasury sent messages indicating that they regarded the Tripartite Monetary Agreement of Sept. 1936 as still in force, and that they would continue to co-operate with the French monetary authorities. Later in July, as capital was still leaving France, the franc was weak, and touched 135 to the pound, but until mid-September the rate stayed near 133. On Sept. 10, and again on Sept. 16, there was a serious break, and after another pause the rate slumped on Oct. 2 to 151⅜, the lowest sterling value recorded for the franc since 1926. This, however, was the worst rate of the year. At the end of 1937, the franc was worth 147¼ to the pound.

The strength or weakness of the franc followed in the main the movement of capital for short-term investment (known generally as 'hot money') to or from France. There were brief periods in the earlier part of 1937 during which refugee capital returned, but the flow did not take a definite inward trend until the last quarter of the year. In six months, so M. Bonnet told the senate at Christmas when defending his budget estimates, the Bank of France had gained 10,000 million francs of gold. Of this, 4,000 millions had been furnished by the stabilization fund from its purchases, and 6,000 millions had been released from serving as collateral for a credit of £40 millions for the French railways, which had been opened by a London banking group in January and had been fully repaid. M. Bonnet was budgeting for a small surplus in 1938; the extraordinary budget, however, would carry on loan account over 14,000 million francs of expenditure on armaments and public works.

Movements of 'hot money' were more important in international balances of payments in 1937 than any long-term capital migration. Even the speculative investment of non-American money in Wall Street, which had been outstanding in 1936, fell to an insignificant figure, and the latter part of the year saw some liquidation of earlier investment of that kind. On the other hand, in the six months ended June 30, United States banking funds abroad declined by $55 millions, and foreign banking funds in the United States increased by $708 millions. There were practically no new foreign issues in the United States in 1937, and such issues in London totalled only £27,400,000, including £21,100,000 for British Empire countries.

The year brought mixed news for markets in foreign bonds. Higher commodity prices and general recovery in the earlier months caused several debtor countries to increase their payments. Better returns from copper and nitrates, for instance, raised the sum available for service of Chilean bonds. The League Loans Committee in London reported in September that all the countries that had been in partial default on League loans, with the exception of Greece, were paying more. A permanent revision of the Hungarian 7½ per cent. loan on a lower interest basis was recommmended to bond holders by the committee. Greece, which up to March had been remitting 40 per cent. of the interest due, had failed to make what the committee regarded as a reasonable proposal for a permanent settlement, offering to pay only 50 per cent. and to establish after five years a 60-year sinking fund. This offer had been rejected and withdrawn. Apart from the League Loans, Poland increased the extent of her default early in 1937. On Nov. 10 the promulgation of a new constitution in Brazil by President Vargas was combined with suspension of payment of all interest and amortization on external debt. It was announced that the question of future payment would be examined immediately, preference being given to countries with which Brazil had a favourable trade balance. A further blow to foreign bondholders was the war in China, which resulted in a fall in Chinese 5 per cent. bonds (1913) from 95 to 65 on the London market in the course of 1937, and of Japanese 6 per cent. bonds from 88½ to 64. (H. V. H.)

FINLAND (*Suomen Tasavalta*), republic of northern Europe, N.W. of Russia, member of the League of Nations. Capital, Helsinki (Helsingfors, seaport; 277,771). President, Kyösti Kallio (born 1873; elected 1937). National flag, blue St. George's cross, with arms central, on white.

Area, Population, and Cities.—Area: 134,557sq.m. (+ 13,254, inland water), divided into 9 departments; population: (1930) 3,667,067, predominantly Evangelical Lutheran (national church, though conscience is free); 3 million speak Finnish, 10 per cent. Swedish. Towns (1935): Turku (Åbo), seaport, 69,953; Tampere (Tammerfors), 59,832; Viipuri (Viborg), 72,755; five others exceeded 20,000.

Education figures: (1935) 10,694 primary schools, 342,256 scholars; 216 secondary, 49,621; (1936) in Helsinki, Turku (Swed.) and Turku (Finn.) universities, 7,246.

History, Trade, Finance, and Defence.—The president is elected for six years by vote of the citizens, the House of Representatives (200; Social-Democrat majority) by adult suffrage (over 24) and proportional representation; there is a Council of State (1937: Professor A. K. Cajander, premier, and 10 ministers). At Helsinki (April) Finland and neighbouring Powers conferred on the arms industry. Baron Mannerheim, Finland's liberator, celebrated (June) his 70th birthday. Amicable relations with Soviet Russia were consolidated at Moscow.

Though only 6·6 per cent. of the land is cultivated, 60 per cent. live by it, forests being valuable. Wood, pulp, and paper furnish industries (others: engineering, textiles) representing, with animal produce, leading exports. Imports (1936): 6,343·4 million mark. (£28,148,000); exports: 7,215·1 (£32,067,000), increased in half-1937. Great Britain takes over half. Air-travel is developing.

Currency unit: *markka* (at par, 193·23 mark. = £1 = $4·87). Budget (1937 estimate): 4,68·37 million mark. Notes (Bank of Finland, over one-third gold-covered): 1,630 million mark.

Army (conscript): 1,824 officers, 29,500 others; civic guards: 100,000; navy: 2 coast defence, 5 submarine, and smaller craft.

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FIRE INSURANCE. World trade and political conditions during 1937 have had their effect on the fire insurance companies. The general improvement in trade and the absence of conflagrations above normal dimensions resulted in some increase in premium income, with a more satisfactory loss ratio than sometimes occurs at such times. Abnormal trade conditions frequently tend to affect the loss ratios of the fire insurance companies adversely. The rates of premium charged are continually under review, and where the general experience warrants such a course, a reduction is made. On the other hand, where a portfolio has for some years shown a constantly unsatisfactory record, increases must be made. The improvement in methods of building construction is a satisfactory feature, tending to reduce the extent of losses, thus improving the general experience, which has its effect on the rates chargeable. As a whole, the general trend is in a downward direction. Premiums in individual cases may also be reduced by discounts for fire-extinguishing appliances, varying from 5 per cent. for simple water buckets or chemical extinguishers to a very substantial proportion of the total premium where approved installations of automatic sprinklers and alarms are installed. Largely on account of the fact that industrialists increasingly realize the advantage to be gained by the installation of extinguishing appliances and by the improved methods of building construction, the loss ratio of insurance companies during the past ten years has shown a reduction from about5 5 per cent. to about 50 per cent. of the premiums received. A corresponding reduction, however, has not been experienced in the expense ratio, several of the items which govern this being constant or even increasing. The installation of extinguishing appliances increases the insurance companies' expenses, since they must employ a staff of experts to make periodical tests to ensure that the appliances will operate efficiently if called upon. This service, however, is to the benefit of the insured, on whose business a fire must have a serious effect even when the material loss is fully covered by insurance, and the ideal condition would be reached if the service rendered by the insurance company in exchange for the premiums could entirely eliminate fire losses. A further factor affecting the expense ratio is that of taxation, which in many parts of the world bears heavily upon the insurance companies.

Before the World War, the activities of the fire insurance companies were limited to the insurance of property against loss by fire and lightning. Since then, however, many other perils have been added to the range, and it is now possible to cover buildings and their contents against storm, tempest and flood, riot and civil commotion, leakage of automatic sprinkler installations, impact by road vehicles, and aircraft and articles dropped therefrom. It is generally agreed that it is the duty of the authorities to protect the property of the public against loss arising from foreign enemies and to maintain order internally. Fire insurance policies have usually excluded war risks, and the rates charged for insurance against riots take into account the fact that if it is established that riot is the cause of the loss, the amount of the damage is usually recoverable from the authorities.

It will be realized that, apart from the question of the government's duty, in the event of hostilities taking place the amount of damage in certain localities is likely to be such as would, if war risks were insured, result in claims of such dimensions that the resources of even the strongest companies would at least be severely strained; on this account the insurance companies and underwriters during 1937 agreed that war and kindred risks are not suitable subjects for insurance, except in respect of marine insurances, and that in future all policies covering fire and other risks applicable to property, other than marine policies, shall contain a condition excluding war, invasion, act of foreign enemy, hostilities (whether war be declared or not), civil war, rebellion, insurrection, or military or usurped power. It has not yet been found possible to bring the United States of America and Canada within the scope of this agreement, but no doubt the companies operating there will be able to come into line with their colleagues elsewhere in the near future.

FIRE WALKING: *see* PSYCHICAL RESEARCH.

FISHERIES. The fisheries of the world, according to tabulations compiled by the United States Bureau of Fisheries, annually yield about 15 million tons, of 2,000lb. each of food or products used in the arts and industries, with a value of about £143 millions. Of this amount, the fisheries conducted in the north Atlantic area by bordering countries produce about 5,900,000 tons, valued at £70 millions, with the production by the north-eastern Atlantic countries amounting to 4,700,000 tons, valued at £60 millions, and by north-western Atlantic countries to 1,200,000 tons, valued at £9,600,000.

The species of importance taken in the north Atlantic area are herring, cod, haddock, mackerel, halibut, sword-fish, crabs, shrimps, and oysters. During recent years, the abundance of several of these species has declined, due to overfishing or other causes. Recognizing that this is a serious threat to the livelihood of thousands of fishermen and shoresmen, steps have been taken, by the governments of various countries, to conserve several of these important species.

The Times]
HERRING DRIFTERS AT THE QUAYSIDE, YARMOUTH, ON THEIR RETURN FROM THE FISHING GROUNDS

North-eastern Atlantic.—On the north-eastern Atlantic the situation is particularly serious, since fishing vessels must now travel great distances from the home port to obtain a catch. These longer voyages entail increased costs, not only in the operation (fuel, upkeep, etc.) of the vessels, but also in refrigerating the fresh fish brought to port. In an effort to improve conditions, various conservation and economic measures were suggested during the past year. As regards conservation measures, a convention was signed during the past year on behalf of the governments of Belgium, Denmark, Germany, Great Britain, Iceland, the Irish Free State, the Netherlands, Norway, Poland, and Sweden. This convention, among other things, regulates the size of the meshes of otter trawls and seine nets fished from vessels of the signatory countries in certain waters of the eastern Atlantic. It is hoped that, through regulations under this convention, the fish population on the grounds of the north-eastern Atlantic will be replenished, since it is expected the regulations will call for mesh of larger size, which will allow small and immature fish to escape and give them a chance to reproduce. As regards economic measures, various plans have been suggested or tried with several of the eastern Atlantic countries. These are intended to promote the more orderly marketing of fish. Some have been aimed at lowering tariff walls and trade barriers ; others at reducing the landings of fish to prevent market gluts ; and still others at improving quality.

North-western Atlantic.—On the north-western Atlantic a somewhat parallel situation has existed, as regards the need for fishing vessels to travel farther and farther from the home port. During 1937, this led to the construction of larger and more modern vessels of the otter trawl type. In general these vessels are capable of making faster trips to the fishing-grounds, as some have speeds of 12 knots or more. These vessels also have improved facilities for refrigerating the fresh fish brought to port. In an effort to replenish the haddock fisheries of the north-western Atlantic, especially on Georges Bank, where depletion of this species has been more evident, operators of United States and Canadian trawl vessels, in the spring of 1937, formed a voluntary compact among themselves, by which they agreed to adopt mesh of larger size in the cod-end of the otter trawls, in order to allow juvenile fish to escape. Most of the trawlers fishing for haddock and cod are now using the mesh of larger size. At a meeting in Montreal in Sept. 1937, the North American Council on Fishery Investigations applauded this action, and hoped that this voluntary compact on the part of the industry would be made permanent by some form of international agreement between the countries prosecuting the haddock fishery of the north-western Atlantic. The meeting was attended by representatives from Canada, Newfoundland, and the United States.

As regards the economic fishery situation in the United States, efforts were directed in 1937 towards stabilizing the frozen fish trade. Early in the year, the sale of frozen fish was retarded because of mild weather conditions being conducive to the production and consumption of fresh fish. This resulted in the accumulation of large surplus stocks in cold storage during the months of January and February, and caused apprehension among many members of the fishery industry lest these stocks be carried over to later in the year and result in curtailing the demand for spring- and summer-caught fish for freezing purposes. The situation was brought to the attention of the U.S. Congress, which enacted measures early in the year, authorizing the Federal purchase of surplus frozen fish for distribution to relief clients. This had a stabilizing influence, in that it opened the channels for the normal sale of fresh-caught fish to freezing concerns. It also resulted in making many people more familiar with fish and fish products, since much of the frozen stock was distributed to people living in the interior of the United States, where the consumption of fish had not been large. In Newfoundland, the plight of the fishers was given further study in 1937 and measures were promulgated to improve their welfare. This consisted mainly of Government provision for outfitting the fishermen and in taking steps to improve methods for the curing and marketing of fish. In the maritime provinces of Canada, further progress was made during 1937 in the formation and operation of co-operative associations of fishermen. This has had a stabilizing and beneficial influence, in that markets were found for several types of fishery products for which there has been a slackened demand during recent years.

Whaling.—For the past two decades, various nations of the world, notably Norway and Great Britain, have been prosecuting the whale fisheries with renewed vigour. Operations have centred almost entirely in the Antarctic, where before this time little whale fishing had been done, because of dangerous weather and ice conditions. With improved methods for capturing whales, however, and for their manufacture into oil aboard the large and staunchly built factory ships now used, these conditions have constituted no obstacle. The take in recent years has been enormous ; for instance, during the period from the season of 1919–20 to the 1935–36 season, inclusive, 302,734 whales were captured in the Antarctic, from which 23,922,688 barrels of oil have been produced, according to Report VIII (1937) of the Committee for Whaling Statistics, Oslo (one barrel of about 50 gallons equals $\frac{1}{6}$ ton ; one ton equals 1,016 kg. or 2,240lb.). From the same report we find that, during the 1935–36 season alone, 30,991 whales were captured in the Antarctic fishery, from which 2,436,338 barrels of oil were produced. Norwegian whaling accounted for 14,421 whales, with an oil production of 1,116,033 barrels ; British whaling accounted for 12,538 whales, with an oil production of 995,167 barrels ; and the whaling of other countries in this area accounted for 4,032 whales, with an oil production of 325,138 barrels. During this season, 7,186 men took part in the Antarctic whale fishery, all of whom except 455 were Norwegians.

Because of the intensive hunt for whales in recent years, many conservationists felt that some regulatory measures were necessary to prevent the complete extermination of the whale and the consequent loss of a valuable economic resource. This apprehension led to concluding an international convention between 26 Powers for the regulation of whaling, which became effective in 1935. While the regulations under this convention have afforded whales much-needed protection, experience gained in recent years has indicated that additional regulatory measures are needed. To accomplish this, an international agreement for the further regulation of whaling was signed in London on June 8, 1937, on behalf of the Argentine Republic, the Commonwealth of Australia, Germany, the Irish Free State, New Zealand, Norway, the Union of South Africa, the United Kingdom of Great Britain and Northern Ireland, and the United States of America. The agreement will become effective when ratified by a majority of the signatory governments, which majority must include Germany, Norway, and the United Kingdom. Up to Dec. 15, 1937, these three countries and the United States have ratified the agreement.

FLANDIN, PIERRE ÉTIENNE (1889–), French advocate and Republican deputy for the Yonne department; was under-secretary of state for air in 1920, minister of commerce in 1924 and 1929–30, of finance 1931–32, and of public works in 1934, on Nov. 8 of which year he became premier. Refused the special powers he sought to combat the financial crisis in May 1935, he resigned, and served as minister of state in succeeding cabinets until the formation of the Blum government in 1936, since when he has not held cabinet office.

FLAX AND LINEN. A study of the linen industry during 1937 reveals a sharp transition from the almost boomlike conditions of the first six months to the poor trade which characterized most of the second half of the year. This setback was occasioned by the growing gap between flax and cotton values, the virtual loss of the China market, and disappointing American buying.

Flax and Linen Research.—The most interesting mechanical development of the year was the introduction of the Eves high-speed drawing frame, whose productive possibilities are remarkable, in that a single-headed first drawing frame will produce 29 miles of sliver per day from a single delivery. The (British) Linen Industry Research Association made further headway in producing new strains of pedigree seed and in developing machinery to decorticate green straw. Continental inventors designed improved flax-production equipment. The latest Soenen flax-pulling machine, which weighs only 5 cwt., will pull seven acres in one day, attended only by a driver and two youths. There was a considerable extension of the use of hydrogen peroxide in yarn bleaching, and the problems of cheese bleaching were the subject of much investigation.

Linen manufacture does not lend itself easily to mass production, but to-day strenuous efforts are being made to speed up machinery and cut out unnecessary processes. Cheese winding, for example, has been substituted for reeling and bundling in the case of fine warps. The automatic linen loom is still in the experimental stage; flax is much less tractable than cotton fibre, and, owing to their lack of elasticity, linen yarns need special consideration during manufacturing processes, though their strength should prove a valuable asset for maintenance of continuous production with automatic machinery.

World Production and Trade.—The U.S.S.R. remains the world's principal producer and exporter of flax, controlling approximately 80 per cent. of the world's (fibre) flax area, and in 1936 produced 5,300,000 centners of flax against 3,300,000 centners in 1913. Acreage was again increased in 1937, but the declared policy is to reduce fibre exports gradually, in order to cater for the Soviet linen industry, which is growing apace. Germany and Latvia also increased their acreage in 1937, the former to 150,000, while the Belgian and Irish acreage declined to 70,710 and 24,100 acres respectively. The British Empire flax resources now yield barely 5 per cent. of the raw material required for linen manufacture, and imports into the United Kingdom have risen from 41,000 tons in 1930 to 66,000 in 1936, drawn mainly from the U.S.S.R., Belgium, and the Baltic States.

Soviet Russia, Germany, and Latvia also increased their consumption of fibre (flax) in 1937, the U.S.S.R.'s 1937 plan calling for 300 million metres of linen fabrics as compared with 285·5 millions in 1936. The United Kingdom, which is still by far the world's largest flax importer and linen exporter, exported linen goods to the value of £7,145,481 in 1936 as against similar exports worth £10,018,626 in 1926. Exports in the first 11 months of 1937 totalled £7,188,017, as against £6,491,106 in the corresponding period of the preceding year. Approximately 45 per cent. of the entire United Kingdom linen output is said to cover home demand, but probably half of this goes to shipping houses and finds its way to every corner of the globe.

The United States is the leading market for linens, and 90 per cent. of their imports of fine linen weighing less than 4oz. per square yard comes from the United Kingdom, from which the imports of linen piece goods, damask, and handkerchiefs for the first 11 months of 1937 amounted to £1,949,768. There were also considerable quantities of linen yarn for threadmaking. Normally China is the leading exporter to the U.S.A. of embroidery linens, this being an interesting example of a triangular industry in which Northern Ireland provides the piece goods, China the workmanship, and the United States the finished article and a ready market.

Leading linen-exporting countries (in order of importance): United Kingdom, Belgium, Czechoslovakia, U.S.S.R., France.

Leading linen-importing countries (in order of importance): U.S.A., Australia, Canada, Central and South America, South Africa, China. (C. R. C.)

FLOODS AND FLOOD CONTROL. The flooding of great rivers, such as the Ganges, the Hwang Ho or Yellow River, the Mississippi, and the Nile, which flow through low-lying valleys, is largely a seasonal phenomenon, and must always have occurred, but every now and again, excessive rainfall or a sudden disaster, such as the breaking of dams, may cause flooding of such severity as to result in heavy loss of life and great destruction to property. At other times, disastrous floods may be caused by a cloudburst, a gale, a sweeping in of the sea, or any abnormal climatic conditions.

The year 1937 was marked by several severe floods. The most serious, however, were those of the Ohio and Mississippi rivers, early in the year, where, on Jan. 18, many deaths were recorded in Indiana, Illinois, Kentucky, and Missouri, and 10,000 families were homeless. A week later martial law had to be proclaimed in the southern Mississippi valley, and it was decided to evacuate all persons for 50m. on either side of the Mississippi from Cairo to New Orleans, while 120,000 volunteers worked night and day along that 1,000-mile stretch to strengthen the dykes. On the 31st, further floods followed an earthquake in Tennessee. By Feb. 4, the worst was over, but nearly 1,000 persons were known to have died, nearly a million families were homeless, and the damage was estimated at £110 millions.

In England, January flooding along the Thames had caused considerable damage, and early in February, the river Vilaine in France flooded the district. On the 13th, floods in Eastern Transvaal and Mozambique destroyed much property, and drowned many natives and cattle; a few days later floods caused damage throughout Ontario in Canada. Belgium also suffered, when, on the 23rd, the neighbourhood of Brussels was flooded from overflowing rivers. On March 15, the English fen country and northern Italy were flooded, and the sea invaded more than 1,000 acres of land along the French Atlantic coast. In the English fens, banks and dykes were threatened, and on the 17th the floods broke through near Littleport. The situation was relieved, however, a few days later, when the river Ouse began to go down. In Switzerland, heavy rains were causing rivers to overflow.

Fox Photos]

AERIAL VIEW OF FLOODS IN THE THAMES VALLEY

Fox Photos]

FLOODS IN THE FEN DISTRICT, DECEMBER 1937. MEN PACKING CLAY ON THE BANKING NEAR MEPAL

May saw flooding in the United States, in Vermont, New Hampshire, and Massachusetts, a hurricane and floods in south-western Poland, and thunderstorms and floods in Budapest and Belgrade.

Floods in Burma early in August, drowning 50 people and rendering more than 3,000 homeless, were followed by a disastrous overflowing of the rivers Gogra and Rapti in the United Provinces in India, in which hundreds of villages were isolated. Europe suffered minor flooding in September, when the river Rhône overflowed, and in Italy the town of Como was partly flooded, while in Oran, Algeria, 20 Algerians and many cattle were swept away by rivers swollen by heavy rains. Between Oct. 28 and 30, severe damage was caused by floods in Beersheba, Syria, and many Syrians were drowned. In November, the tiny republic of Andorra was flooded, as was, in December, Andalusia in Spain, while in Italy the river Tiber rose to but 2in. beneath the 1900 flood level.

Methods of Flood Control.—A number of theories have been advanced for the control of floods, such as the construction of levees, establishments of spillways, construction of reservoirs, afforestation, terracing cultivated soil, and the creation of floodways to carry off the surplus water at flood-time. Levees may, however, break through in time of flood, and while the establishment of reservoirs in the headwaters of the various streams which flow into the main river would be of immeasurable value in flood control, the cost would be very large.

Among the other theories of flood control, reforestation and improved soil management are of vital importance. The accepted method of crop production on the uplands by breaking up the sod and the production of only cultivated crops promotes soil erosion, and decreases the water-holding power of the soil. The same thing is true when the primeval forest is destroyed and the protecting vegetation thus removed. Soil erosion under these conditions takes place more rapidly. More water escapes to the river, and the soil debris is deposited in the river channel in the lowlands, thus increasing the damage from floods. Floods probably as severe as those of 1937 antedated man's settlement of the Mississippi valley, and the statement that 'The Mississippi flood is a man-made disaster' is therefore inaccurate. It is true that the destruction of the protective forest and native sod by man has in many cases accelerated the rapidity of the flood waters, and thereby has increased the damage done by floods. It is also true that modern civilized man has built villages, towns, and cities in the lower-lying flood plain, where damage and destruction of life and property must result whenever flood conditions prevail.

The fourth theory for controlling floods is by the creation of a floodway to accommodate the maximum flood. In a state of nature, the river naturally spills over its banks at certain points. The advocates of this theory of control would permit and cause the river to spill over at certain points and flood a confined portion of the surrounding country. In effect, the river would be widened at certain points to deal with the flood and a certain portion of the surrounding country deliberately sacrificed to protect the remainder.

There is little new, except as to magnitude, in modern methods of flood control. It is, however, now being realized that no single method will solve the problem. Levees, spillways, floodways, and reservoirs must all be used, and reforestation and a decided change in agricultural practice are undoubtedly necessary in the case of the major flood-control problems.

FLORIDA : *see* UNITED STATES OF AMERICA.

FLOUR AND FLOUR MILLING. A demand for richer breads has encouraged a tendency towards slightly creamier flour types. Although colour is still an important quality factor, a dead-white flour is no longer considered a necessity, and the newer flour grades have reflected a disposition on the part of the baker to be better satisfied with a slightly creamy, more natural flour tint.

The tendency towards a slightly higher protein value in the flour of recent crops is probably due to favourable growing conditions. Since environment at the critical stages of growth, particularly moisture and fertilization, has a great influence upon wheat composition, the seasonal variations in flour quality may be considerable, especially where wheat blending is not practised. Such variations should not be considered as important trends in the milling industry as a whole.

Enzymatically, there is no great difference in flour quality, although some millers have succeeded in developing the natural diastase of wheat by controlling the 'tempering' conditions of wheat so as to maintain an atmosphere favourable to enzymic activity.

Milling Practice.—Flour blending has not only been practised by most of the successful bakers, but also by many of the better millers. Since scientifically controlled wheat blending usually precedes the milling of flour, the ultimate baked product in most instances represents a wide variety of wheats from several different growing sections. These repeated blending operations, based upon the results of chemical analyses and scientific baking tests, go far towards ensuring uniform quality in the various flour grades.

Adequate lift capacity, with dependable laboratory facilities, have been vital factors in securing uniformity in the characteristics of any given grade or type of flour. Without ample storage capacity and a means of quickly and accurately determining the quality differences in the incoming ears of wheat during the harvest season, it is impossible to separate the various wheat types in such a manner that the quality of the flour may be controlled within the quality limitations of the desired grade.

While ultraviolet irradiation for the purpose of vitamin production has become established to a certain degree in the field of cereal foods, it has yet to become practicable in the milling industry. In view of the growing interest in vitamins as a nutritional necessity, such a development may be looked upon as a future possibility.

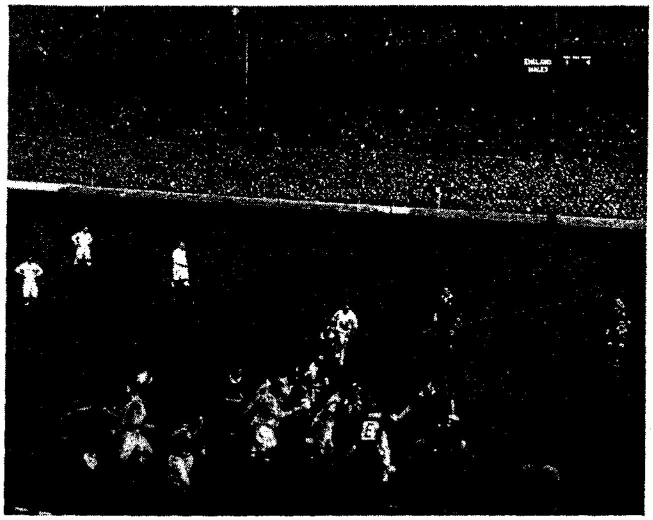
Wheat germ oil, until recently a laboratory curiosity, has become recognized as an extremely rich source of vitamins B and E. A few of the larger millers have taken steps to separate the wheat germ from their feed-house streams, and have found a profitable market for the processed germ as well as for the oil obtained therefrom.

FLOWERS AND FLOWER FARMING: *see* HORTICULTURE.

FOOD PRICES: *see* PRICES, STATISTICS OF.

FOOTBALL. Under this head are reviewed the various forms of football as played in Great Britain, the U.S.A., and Canada during 1937.

The Rugby Union Game.—The season that ended in April of 1937 saw England win the international championship, beating all the other three countries. But never has the championship been won by such a narrow margin, or, as some would say, by a luckier side! Wales were beaten at Twickenham by a dropped goal to a try (4 points to 3), Ireland were beaten at Twickenham by a penalty goal and two tries to a goal and a try (9 points to 8), and Scotland were beaten in Edinburgh by two tries to a penalty goal (6 points to 3). Thus in three games England scored in all only 5 points more than their opponents. The English side reserved their best display for the Calcutta Cup match—that against Scotland, in which England not only won the Cup and the championship (for this is the last of the internationals), but won for the first time on the Murrayfield ground. This ground was opened in 1925, and England had never won there before, though they had tried to do so on six previous occasions. England were the last of the Home countries to win there. H. G. Owen Smith, equally well-known as a South African and Oxford cricketer, captained the England side, and played brilliantly at fullback. There have been few finer athletes in recent years than Owen Smith, who was a first-class Rugby footballer and cricketer, a splendid boxer, and kept goal for his hospital (St. Mary's), in the Hospitals Association Final.



Sport & General]

ENGLAND MAKE A RUSH ON THE TOUCHLINE IN THE INTERNATIONAL RUGBY MATCH, ENGLAND V. WALES, 1937

Ireland came next in the table (they probably had the best side of the lot), with Scotland next, and Wales last. Wales lost all her matches, though it should be borne in mind that the two best players in the Rugby world, Cliff Jones and Wilfred Wooller, were not of much use to Wales, Jones being unfit to play at all, and Wooller never being really fit. The international football was not of a very high standard, though there was one superb match—the one between England and Ireland at Twickenham, where G. J. Morgan, the Irish captain, and F. G. Moran, the right wing, played very well indeed.

Gloucestershire won the county championship, beating the East Midlands in the final. This was their ninth win, and they are now level with Yorkshire in the number of wins. But Gloucestershire were lucky to get past the semi-final. There they beat Kent at Gloucester by a doubtful dropped goal to a try (4 points to 3).

A very strong Army side won the inter-Services tournament, beating the Royal Navy and the Royal Air Force fairly easily. There were seven Internationals in the side, among them E. J. Unwin and R. Leyland in the three-quarter line, and G. J. Dean and F. J. Reynolds at half-back. The Hospitals Cup was won by St. Mary's, with a very fine side that included Owen Smith. They beat Guy's in the final by 11 points to 8.

The season that started in the autumn of 1937 was memorable in its first half for two things in particular—the retirement from the chairmanship of the English selection committee of John Daniell, and the magnificent victory of Oxford over Cambridge. John Daniell had been a selector for over 20 years, and everyone hopes that, after a little rest, he will resume the splendid work he was doing for the game. When John Brett (Durham and St. Edmund Hall) led his Oxford side on to the field on Dec. 7 against the potentially brilliant Cambridge side, led by J. D. Low (Dover and Jesus), only the most ardent Oxonian thought that Oxford had the remotest chance of winning. But some splendid tackling by H. D. Freakes, who came up from fullback to centre three-quarter for the occasion, and M. M. Walford, and excellent leadership of his forwards by Brett, with P. K. Mayhew helping him well, put the Cambridge backs completely off their game, and Oxford won easily by a goal and four tries to a dropped goal (17 points to 4). His Majesty the King was present at the match.

Rugby League Football.—This professional form of Rugby football is now practically confined to Yorkshire and Lancashire. Actually amateurs are allowed to take part, but, as in professional Association, by far the bulk of the players are professionals. The attempt to establish the game in London failed, and at the beginning of the 1937–38 season, the remaining London club was disbanded. The rules are slightly different from those prevailing in Rugby Union football, and there are only 13 players on each side. In the all-Yorkshire semi-final of the Challenge Cup, between Wakefield Trinity and Keighley at Headingley, at the end of last season, there were 40,000 present, a record for any Rugby League match in Yorkshire. This particular game ended in a draw, with no score, and in the replay Keighley won by 5 points to nil. They went on to play Widnes in the final at Wembley, but they were well beaten there by 18 points to 5. In the League table, Salford were top, Warrington, Leeds, and Liverpool Stanley coming next in that order. These four then had a knock-out competition for the championship, which Salford won, beating Warrington in the final by 13 points to 11.

In the first half of the 1937–38 season, Warrington did well again, but Yorkshire clubs were bunched at the top in greater numbers than usual. An Australian Rugby League side toured the country during that time, but did not do very well.

Association Football.—There were some interesting individual records achieved in the season 1936–37. W. R. Dean, the Everton and England centre forward, broke a record that had long been held by Steve Bloomer, that of scoring the greatest number of goals in League football. Bloomer's total stood at 352; but 36 more by Dean during the past season brought his total to 375, and he looks fit for many goals yet. Still, he has some distance to go to equal the record of James McGrory (Celtic), who is still playing well, and whose total at the same date was 405. The game lost some great men in 1937. That superb outside forward, subsequently a director of his club, W. I. Bassett of West Bromwich Albion, died on the eve of his club's visit to London to play Preston North End in the semi-final of the F.A. Cup. Perhaps it was not surprising that the Albion lost badly. 'Billy' Bassett was a great little man, on the field and off. Sir Charles Clegg and Mr. Arthur Kingscott, two famous administrators, died the same year. Sir Charles played in the first international match between England and Scotland (in 1872), and was connected with the Football Association from 1886 till his death, having been chairman from 1890 till 1923, and from then on, president. He was knighted for his services to football in 1927. Mr. Kingscott was a former hon. treasurer of the F.A.

Playing splendid football with a well-balanced side, Manchester City headed the League table, Charlton Athletic coming next, and Arsenal third. Strangely enough, the other Manchester club, Manchester United, were practically bottom of the table, Sheffield Wednesday being the only club below them. Manchester City's goal record was easily the best in the table. They scored 107 goals, whereas the runners-up scored only 58 in the 42 matches. It is doubtful whether there has ever been such a disparity between the first and second clubs before. No one likes to see Aston Villa in the Second Division—it seems all wrong, even though other famous clubs like Blackburn Rovers and Sheffield United are there as well. It was hoped that they would get back straight away to the First Division; but they had to be content with ninth position, Sheffield United being seventh, and Blackburn Rovers twelfth. Leicester City were top, and they, with Blackpool, were promoted at the end of the season. The F.A. Cup final, played as usual at the Imperial Stadium, Wembley, was won by Sunderland, who beat Preston North End rather more easily than a score of 3–1 would suggest. It seems almost incredible, for they have had a fine side for very many years now, but it was the first time that Sunderland had ever won the Cup. Even so, they all but had their usual luck in Cup matches, for it took them three games to dispose of Wolverhampton Wanderers in the Sixth Round. The Cup-winners in other countries were: Celtic (Scotland), Belfast Celtic (Irish F.A.), and Crewe Alexandra (Wales). There were record crowds at both Glasgow and Wembley, and the comparative figures are interesting. There were 146,000 people at Glasgow and they paid £12,248, and 93,000 at Wembley and they paid £24,831.

Fox Photos]

AERIAL PHOTOGRAPH OF WEMBLEY STADIUM DURING THE CUP FINAL, 1937, WHEN SUNDERLAND BEAT PRESTON NORTH END

There is nothing like so much interest taken in Association international matches, except perhaps in the England *v.* Scotland match, which was played at Glasgow last season before a record crowd of 149,547 spectators. Scotland won by 3 goals to 1. But Wales won the Championship, beating all the other three countries. Scotland came next, then England, and finally Ireland, with three defeats. In the amateur internationals, Scotland won all her matches, England winning one only, that against Wales at Portsmouth, about which there was no mistake, for Wales were beaten by 9 goals to 1. During the summer, or rather in May, an England side toured Norway, Sweden, and Finland, and beat all these countries easily. Scotland found their task a much harder one in Austria and Czechoslovakia. Still, they managed to avoid defeat, drawing the game in Vienna and winning in Prague.

The season that started in the autumn of 1937 went off smoothly, with preparations being made for much rejoicing at the end of it, for 1937–38 is the jubilee season, the Football League having been formed in 1888 with 12 clubs. It is interesting to note that not one of these clubs has remained continuously in the First Division. All have been relegated for long or short periods at some time or other. Perhaps the most interesting general feature of the League tables before Christmas was the fight Aston Villa were making in Division II. At the turn of the year they displaced Coventry City at the top. The University match was won by Cambridge, again unexpectedly, though not anything like so unexpected as their defeat in the Rugby match.

(D. R. G.)

American Football.—During the past few years football has staged a steady recovery in the United States. This uptrend continued in 1937, and, despite the fact that discouraging weather conditions obtained persistently during the last half of the season, football patronage was back near the peak. It is estimated that close on 20 million people attended the football games throughout the United States. The foremost teams of the season, as ranked in a nation-wide poll of sports writers, were Pittsburgh, California, Fordham, and Alabama, in that order. Alabama was the only one of the four to win all of its games, and was invited by California to be its opponent in the Rose Bowl fixture at Pasadena on New Year's Day. The invitation went forward to Alabama after the Pittsburgh players had voted themselves out of the running with Fordham hopeful of getting the call. The California team won by a score of 13 to nothing.

The style of play in 1937 was featured by one marked trend. The use of the five-man line, confined largely to the south-west heretofore, was extensively adopted in the east, with Yale starting the vogue. As a consequence, the outcry was heard that the defence, with its changing set-up from a six to a seven or five-man line, had too big an advantage over the attack, throwing its blocking assignments into confusion. The Harvard style of attack, with its adaptation of the deception and faking of the double wing to the single wing, was acclaimed as the best of the year and as the model to set the fashion in the east in 1938.

In Canada, where many of the features of the United States game have been adopted, with great stress given to the forward pass in recent years, football also enjoyed a lively season. Canadians' thoughts naturally turn to ice hockey in the autumn, and nothing can displace this game in their favour, but football is taking hold more and more.

Kicking, which plays second fiddle to running and passing in the American college game, is of paramount importance in the Dominion brand of football, both as an offensive and defensive weapon. The success of the Toronto Argonauts bears this out. With three outstanding punters in Isbister, Selkirk, and West, the Argonauts, whose running attack was largely centred in an end sweep featuring long laterals, defeated rivals that had greater running and passing strength to win the Canadian championship. They won the Big Four title by defeating the Ottawa Rough Riders, and in the eastern final eliminated the Sarnia Imperials. Then came the Dominion final with the western champions, the Winnipeg Blue Bombers. Toronto won on Selkirk's field goal to become the national champions.

FOOTBALL POOLS. In the 1937 season an estimated 9 million persons in the United Kingdom, or three families out of four, 'invested' in football pools; *i.e.* in attempts to forecast the results of Association football matches (Association rather than Rugby, because of its larger number of drawn matches, and hence enhanced forecast difficulties). Of the 44 weekly English League matches, the results averaged for 1937, 9 draws, 10 'away' wins, and 25 'home' wins. As most pools include the 10 Scottish League matches, the total to be forecast is 54. The approximate aggregate pool stakes were £40 millions, as against £20 millions in the 1935–36 season.

The legality (previously dubious) of betting on football results was established by the 1934 Betting and Lotteries Act. There are now three legal drawbacks: the investor must not be a minor; must not 'resort' to the promoter's premises; and must not pay cash for his investments (*i.e.* in practice he pays only for the last, and not the current week's investment. The colossal number of investors makes it possible for 'knockers', or fraudulent investors, to have a fair chance of winning on credit only).

Five per cent. commission on the pools is taken by the promoters. This represents their net profit: all expenses are paid by the investor. Membership of the Football Pools Promoters' Association (headquarters in Liverpool, and trade mark a blindfold figure of Justice) is extremely exclusive. There are about a dozen leading firms; in every case the shares, Ordinary or Preference, are held mainly by members of the same firm—usually of the same family—or unissued. In 1937 approximately £2 millions for postage stamps and £1 million for postal orders accrued to the Post Office. Liverpool had a special staff of 200 to deal with pool correspondence. In the last 3 months of 1937, 49,925,526 letters were addressed to the pool promoters and 104,791,680 dispatched by them. The following tables show the increase in postal revenue:

	6*d.* postal orders	1*s.* postal orders	2*s.* 6*d.* postal orders
	£	£	£
April–March 1929–30 .	20,797,080	13,023,610	11,804,190
April–March 1934–35 .	22,923,525	35,959,050	20,882,580
April–March 1935–36 .	*31,804,495	46,487,695	26,201,100
April–March 1936–37 .	*30,586,335	48,826,465	29,143,245

* The drop in 6*d.* postal orders in 1936–37 is probably due to the rise in the unit of pool investments.

(*See* also MAIL ORDER; MULTIPLE AND CHAIN STORES.)

FOOTE, ARTHUR WILLIAM, American organist and composer; born in Salem, Mass., March 5, 1853; died in Boston, April 9, 1937. From 1878 to 1910 he was organist of the First Unitarian Church of Boston. He also served as president of the American Guild of Organists, 1909–12. Among his compositions were the symphonic prologue *Francesca da Rimini*, the overture *In the Mountains*, and the suite *Four Character Pieces after Omar Khayyám*. His most famous song was *The Night has a Thousand Eyes*.

FORAGE CROPS. In Great Britain the output of both seeds hay and meadow hay in 1937 was well above the average of recent years:

GREAT BRITAIN

	Acreage	Yield per acre	Production
Seeds Hay:	000 acres	Cwt.	000 tons
1926–35 . .	1,909	28·2	2,706
1936 . .	1,735	25·9	2,252
1937 . .	1,877	30·0 *	2,815 *
Meadow Hay:			
1926–35 . .	4,802	20·0	4,814
1936 . .	4,839	20·6	4,976
1937 . .	4,859	21·6 *	5,248 *

* Provisional figures.

The price of clover hay (first quality) fell from 113*s.* per ton in Dec. 1936 to 90*s.* per ton in Dec. 1937; meadow hay fell from 83*s.* to 64*s.* in the same period. Straw prices varied little.

Increasingly serious attention is being paid to the production of grass. Prof. Stapledon's researches show what enormous potentialities there may be for improving the yield of grassland by seed selection and skilful management of the sward. Also, the development of grass drying has attracted much public interest during the year. Drying outfits are becoming progressively cheaper and more efficient. Dried young grass of good quality forms a valuable concentrated food for livestock, and may compete in price with imported concentrates.

The following table gives the production of the chief kinds of hay in certain other important countries:

OUTPUT
000 Short Tons

	1937	1936	1931–35 Average
Germany:			
Clover hay . .	8,509	10,324	9,272
Alfalfa hay . .	3,294	3,302	2,196
Meadow hay . .	29,513	30,664	25,242
France:			
Alfalfa, clover, and sainfoin hay . .	12,998	13,016	12,620
Annual green fodder .	14,816	15,735	13,587
United States:			
Wild hay . . .	9,302	6,915	8,922
Tame hay . . . (including alfalfa)	73,795	63,309	67,843

In Europe, generally speaking, production was less than in 1936, but above the 1931–35 average.

In the U.S.A., hay crops of all kinds showed good yields. The increased use of mechanical corn pickers and combines has reduced the supply of roughage ordinarily conserved in some areas. There has been a notable decline in the alfalfa acreage, followed, however, by increased planting of lespedeza and cowpeas for hay. In New Zealand, pastures were good owing to the wet summer, but hay was poor, and much of it was turned into silage. Australian forage crops were better than for several years past. (P. L. Y.)

FORBES-ROBERTSON, SIR JOHNSTON, English actor; born in London, Jan. 16, 1853; died at Dover, Nov. 6, 1937. For details of his stage career, *see Ency. Brit.*, vol. 9, p. 490. Sir Johnston's final retirement from his profession in 1915 had the rare distinction of being really final, for any subsequent appearance of his was purely voluntary and given for purposes of charity. The chief of these voluntary appearances was in *The Passing of the Third Floor Back*, which ran for some months in 1917 for the benefit of War charities. The very high esteem in which Sir Johnston was held by the theatre-going public was due, perhaps more than to any other quality, to his remarkable physical advantages, including the great beauty of his voice. It was inevitable that he should have been a member of the B.B.C.'s Advisory Committee on spoken English.

Elliott & Fry, Ltd.]
THE LATE SIR JOHNSTON FORBES-ROBERTSON

FOREIGN MISSIONS, RELIGIOUS.—In 1937, a centenary, a diamond jubilee, two golden jubilees, and a silver jubilee commemorated the birth of the Church of England in, respectively, Bombay, Uganda, Jerusalem, Japan, and China; in each case the Church was revealed as no longer foreign to the countries of its adoption, for Chinese and Japanese bishops took part in the Far East celebrations, and at the Uganda Thanksgiving Service 60 African clergy were present; but, in spite of these encouraging signs of progress, the Archbishop of Canterbury had to deplore in the autumn a shrinkage of the area of, and a serious shortage of recruits for, the mission field, as well as a diminution of the available funds.

Current contributions in the year 1936–37 (excluding legacies and income from endowments) from the Churches of the Anglican Communion in the British Isles for the work of the Church overseas amounted to £1,020,757. The average contributions for the years from 1931 to 1936 amounted to £1,022,376; the Church Missionary Society's receipts were £330,890, and those of the S.P.G., £197,630.

The overseas missions of the Methodist Church record another year of spiritual progress, and the Conference (at Bradford) rejoiced that the debt of £13,012 at the end of 1935 was completely cleared in 1936, due to some extent to retrenchment in the mission fields. The income of the Methodist Missionary Society from home sources was £331,380, as against £327,500 for the previous year.

From the British Isles the London Missionary Society received in 1936–37 £129,435 as against £133,100 in 1935–36. The total income from all sources was £344,116 as against £351,805, the excess of expenditure over income being £16,797. The Autumn Assembly of the Congregational Union held at Bristol in October devoted much time to the consideration of the L.M.S. crisis, viewing with deep concern the financial situation of its foreign missions and inaugurating a campaign of faith and renewed effort.

The Baptist Missionary Society had a total expenditure for 1936–37 (including all home expenditure) of £213,229, there being a deficiency on the year's working of £4,070. The reports of most missionary societies showed reduced incomes and an inadequate supply of workers, but there was every evidence of successful campaigns, even in the troublous field of the Far East.

United States.—For the foreign missions of the Protestant Churches of the United States, the year 1937 has been chiefly characterized by two tendencies and one major crisis. The first tendency has been toward a recovery in income. The decline in giving, which began about 1925 as a reaction against the forced expansion of the first years after the World War and was accentuated by the financial depression commencing in 1929, has halted. While, with declining interest rates, income from endowments has not come back to earlier levels, gifts from living donors have substantially increased. As a result, the reduction in missionary staffs has been slowed down, and here and there a few reinforcements have been sent out. A second tendency has been toward an adjustment of the policies of mission boards to the new conditions in the midst of which foreign missions are compelled to operate. The adjustment is by no means completed, but it is being made. It has been furthered by the preparation for the meeting of the International Missionary Council at Madras, India, to be held in Dec. 1938. The major crisis has been brought about by the hostilities between Japan and China. The attendant intensification of Japanese nationalism has made the work of the foreign missionary more difficult in Japan and Korea. In China, the fighting has interrupted many of the normal activities of missionaries and churches.

The Japanese success is being followed by conditions very different from those under which Christian missions in China proper have heretofore operated. Since the Far East is a region in which Americans predominate in Protestant missions, the crisis is bringing problems which are engaging much attention from American missionaries and mission boards.

Roman Catholic mission agencies in the United States have continued to send substantial numbers of recruits to their growing enterprises in the Far East. American Roman Catholic missions, even more than American Protestant missions, are concentrated in the Far East.

The Sino-Japanese crisis has, therefore, been disturbing for both Roman Catholic and Protestant missions.

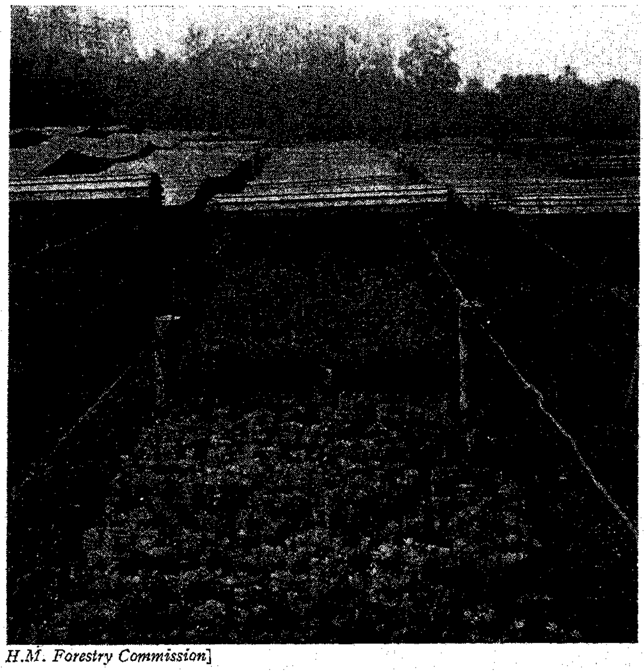
FORESTRY AND REFORESTATION. Recent silvicultural developments have taken place in two main directions: (1) afforestation, to increase the area under forest, (2) measures for increasing the productivity of existing forests. The Italian government has been afforesting over 20,000 acres a year, chiefly on denuded mountain slopes. Great Britain, under a State afforestation scheme, has planted an area of over 111,000 acres between 1920 and 1936; the normal programme of 20,000 acres has recently been increased to 30,000 acres a year. The Irish Free State has afforested 57,000 acres since 1931. The French Senate has approved an extensive scheme of afforestation of idle lands, with the aid of government loans. In Czechoslovakia, Hungary, and other European countries, considerable areas of bare land have been planted up during recent years. Among non-European countries, New Zealand, South Africa, and Australia have carried out large planting programmes through State and private agencies. In New Zealand alone, about 720,000 acres of exotic plantations have been formed up to date; of these, 406,000 acres are State and 314,000 acres private. Japan can show a larger area of artificial forests than any other country in the world. During the last forty-five years the area afforested by State, private, and other agencies amounts to nearly 8,000,000 acres.

Steps are being taken to increase the productivity and out-turn of existing forests, and to develop further forest areas. Germany, in her efforts to become self-supporting, has increased the annual cut of all forests over 125 acres by 50 per cent., and is exercising a stricter control over private forests than formerly. Russia is opening up new areas to regular working, especially in Siberia; an increased timber output of 30 per cent. was planned for 1937. In the tropics, considerable advance is noticeable in methods of natural and artificial regeneration designed to improve the productivity of the forests. The system of *taungya* plantations, formed with the aid of shifting cultivation, and originally developed in Burma, has been extended to many parts of the tropics.

In Europe, the artificial creation of extensive stands of conifers outside their natural habitat has in some places resulted in serious insect and fungus attacks. This has led to a movement aiming at more natural methods of silviculture, which started in the latter part of last century, but is largely a post-war development. The main object is to keep forests in a healthy condition and so increase the outturn of timber of good quality. Clear-cutting and replanting are being abandoned in favour of 'continuous forest' shelter-wood systems with natural regeneration, and mixtures are being increasingly employed in preference to pure stands. In Germany this idea has had its latest exposition by Heske and Rubner under the title *Vorratswirtschaft* (growing stock management), under which the aim is not to secure the maximum immediate profit in the working of a forest, but to concentrate attention on maintaining the optimum soil conditions and growing stock with the object of bringing the highest ultimate return.

Utilization of Wood.—Recovery from the recent world economic depression has been reflected in the increased utilization of wood, partly stimulated by the shortage of steel. The use of 'composite wood', in the form of plywood, laminated boards, block boards, and fibrous boards, is on the increase. In heavy constructional work—bridges, roof trusses, etc.—the use of composite wood has been greatly extended by improvements in methods of manufacture, in glues, and in joints and fastenings, while plywood faced with metal is now commonly used in aircraft construction and domestic fittings. The pulpwood industry has likewise shown great development. In European countries material formerly used as pitwood is being increasingly used as pulpwood. Russia is starting to build large pulpmills in order to export pulp instead of pulpwood. In Australia, research into the paper-making properties of hardwoods is in progress, while in Burma a scheme is on foot for the manufacture of paper-pulp from bamboos. Special attention is being devoted, particularly in France and Germany, to the use of wood and charcoal as fuel for motive power, and during the past ten years there has been a notable increase in the efficiency of producer-gas engines, not only for stationary power-plant, but also for road vehicles.

International Co-operation.—Since the War, two International Forestry Congresses have been held, the first in Rome in 1926 and the second in Budapest in 1936. In order to carry out preparatory arrangements for future congresses a permanent committee has been formed which will meet from time to time in different countries, and will have a fixed seat in the International Institute of Agriculture in Rome. The International Union of Forest Research Organizations has met three times during the past ten years. The seventh Congress was held at Stockholm in 1929, the eighth at Nancy in 1932, and the ninth at different



H.M. Forestry Commission]

FORESTRY.—A SECTION OF THE KENNINGTON NURSERY PLANTATION AT OXFORD centres in Hungary in Aug. 1936. The Union has produced, through its Bibliographical Committee, a scheme of international co-operation in the preparation of references and abstracts of current forest literature. International co-operation in timber utilization is now secured through the *Comité International du Bois* (*C.I.B.*), constituted as a result of an International Timber Conference held in Vienna in 1932. This conference was the outcome of a warning as to the uncertainty of future timber supplies, given by the Economic Committee of the League of Nations in a publication entitled *The Timber Problem* (Geneva, 1932). A second conference was held in London in 1936 under the auspices of the Timber Development Association in collaboration with the *C.I.B.* The *C.I.B.* includes in its membership timber organizations of a number of countries, and concerns itself with the utilization of wood, with the regulation of the timber market, and with questions concerning inter-European timber policy. It issues a periodical entitled *The International Review on Timber Utilization*, and also publishes periodical statistics of timber exports from different countries.

In the unsettled political condition of the world in recent years, this harmonious co-operation among different countries in questions relating to forestry is a matter for congratulation.

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North America.—In Canada, the forests cover 1,254,082 sq.m., or 36·2 per cent. of the land area. Of this, over 800,000sq.m. are accessible and productive, more than 400,000sq.m. consisting of young growth and the remainder of saleable timber. Aircraft is used for surveys, and in this way 714,000sq.m. have been surveyed and photographed at a fraction of the cost of a ground survey.

Reforestation by planting is playing an increasing part in the conservation of forests. The government has, in 36 years, distributed over 145 million tree-seedlings and cuttings to 55,000 farmers of the western provinces to establish shelter belts of trees. During 1937, 8 million trees were planted in the prairie provinces, partly to check soil-drift and to help conserve moisture in the land in the drought areas. The Oliver Institute in Alberta distributes 100,000 trees annually. In Nova Scotia, most of the timber-land is privately owned, and the distribution of 125,000 trees from a provincial nursery was the only constructive measure taken.

Losses are due mainly to fires and fungus diseases. During the last 10 years an average of 5,700 fires occurred annually, 84 per cent. of which were caused by carelessness and therefore preventable. In 1936, the total area burned was over 3 million acres, a loss of $6 millions. The Division of Physics of the National Research Laboratory is investigating the causes of fires.

Recently, Japan bought more than $1 million worth of timber in Vancouver Island and the Queen Charlotte Islands, and a tract of 46sq.m. at Port McGill, with 600 million board feet of timber. (V. R.)

In the United States, about one-fourth of the continental land area (or approximately 495 million acres) is capable of producing timber for commercial use. Part of this (estimated at about a third) comprises the National Forests, which are lands to which the government holds the title ; a small area (estimated at about a fortieth) is under States, county, and municipal ownership, while the remainder (the major portion) is privately owned. Some 6 million people derive a livelihood from industries dependent on forest resources, while from farm wood lots, which make up more than 17 per cent. of all farm lands, about 2½ million farmers obtain materials and part of their incomes. In addition, 30 million people use the National Forests, with their numerous camping facilities, for holiday and recreational purposes.

Forest conservation, including replanting and protection of trees from fire and disease, has been actively carried out in recent years. For instance, since 1935 more than 44 million trees have been planted on the Prairie States planting project. In 1935, more than 35 million were produced and distributed by States in co-operation with the Federal government. Recently the Civilian Conservation Corps, working during two six-months periods, and working at over 2,000 camps, planted 365,233,500 trees, and improved 335,295 acres of forest land. The area reforested during 1936 was greater than ever before, and a total of some 460 million young trees and seedlings was planted.

Fire still takes a heavy annual toll, although the risk has been very much reduced, and is now only 1·6 per cent. in protected areas ; while of the 3 million acres burned over in 1935, 90 per cent. was unprotected land. Two-thirds of the total forest area is now under fire-protection service, and the Civilian Conservation Corps has been adding to this at the rate of some 155,064 acres a year.

FORMOSA (*Taiwan*), a large island in the western Pacific, between the east and south China seas, bisected by the Tropic of Cancer ; area 13,429sq.m. ; capital, Taihoku ; population (1935) 5,315,642, mainly Chinese. Formosa has been part of the Japanese Empire since 1895, when it was conquered from China. Part of the island was under Dutch rule from 1624 until 1662 ; and remains of forts and other Dutch buildings are still to be found in the southern part of the island, in the vicinity of Tainan. Formosa is governed by a governor-general, assisted by an advisory council, the majority of the members of which are Japanese. The present governor-general is Admiral Seizo Kobayashi. An important Japanese naval base, access to which is closely restricted, is at Mako, in the Pescadores, islands off the western coast of Formosa. The importance of the island as an aeroplane and naval base has been demonstrated during the hostilities with China. Formosa is, in proportion to its size, perhaps the richest of Japan's colonies. It has been intensively exploited, Japanese investment in the island being estimated at 400 million yen (£40 millions at pre-devaluation rates of exchange). Most of this capital has been invested in the sugar industry. Many of Japan's needs—sugar, bananas, pineapples, citrus fruits—are largely or entirely supplied from Formosa, which is also a large producer of rice and the world's largest source of natural camphor. In 1936, Japan received over 90 per cent. of Formosa's exports and supplied over 80 per cent. of its imports. (W. H. CH.)

FRANCE. Republic situated in the west of Europe ; a member of the League of Nations ; bordered N. by Belgium and Luxemburg, N.E. by Germany, E. by Switzerland, S.E. by Italy, S. by Spain, with the Mediterranean Sea on its south-east coast, the Atlantic Ocean on the west, and the English Channel and the North Sea to the north. Capital : Paris. President : M. Lebrun. National flag : blue, white, and red in equal vertical stripes.

Area and Population.—Area : 212,736sq.m. On March 9, 1931, the population of France was 41,928,851.

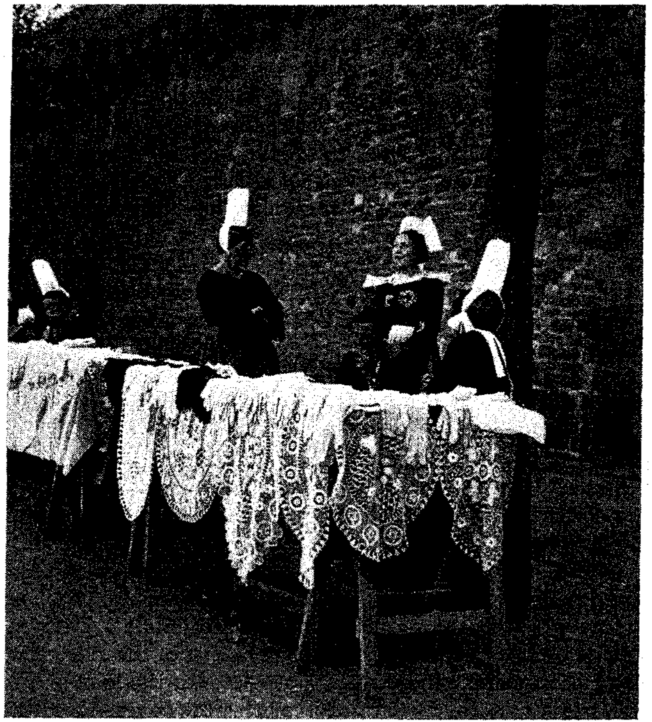
On March 8, 1936, it was 42,013,506, an increase of 84,655 in five years. The population is 48·3 per cent. male, and 48·8 per cent. rural. In 1921, the rural population was 53·6 per cent. The exodus from the country into the towns thus continues gradually. In France, Church and State are separated. The vast majority of the French population is Catholic. There are also about a million Protestants and Jews. The language spoken by almost all French people is French. Here and there, however, dialects, such as Flemish, Alsatian, Provençal, Basque, Catalan, Breton, and Corsican are still in use. In certain villages of Lorraine, German is spoken.

Education.—Education is conducted in France either by the State institutions, or by ' free ' institutions which are for the most part Catholic. Education in general is under reorganization, but at present consists of three stages. Examinations at the end of the first two stages allow the student to proceed to the third stage. In every Commune of France there is at least one State elementary school. Education in the first two stages is free. This system of free education for all is known as *l'école unique*. In 1937, there were 70,000 elementary schools, with 4,411,000 pupils. In 1935, there were more than 160,000 pupils in the State secondary schools (*collèges* or *lycées*). In 1936, at the University of Paris, the first in France, there were 32,577 enrolled students. There were then 73,852 university students in the whole of France, a decrease of 8,366 from the previous year.

Important Towns.—There are 17 towns in France with populations of over 100,000 inhabitants: Paris, 2,829,746 (greater Paris 4,962,967); Marseilles, 801,000; Lyons, 580,000; Bordeaux, 263,000; Nice, 220,000; Lille, 202,000; Toulouse, 195,000; St. Etienne, 191,000; Nantes, 187,000; Strasbourg, 181,000; Le Havre, 165,000; Toulon, 133,000; Rouen, 123,000; Nancy, 121,000; Roubaix, 117,000; Rheims, 113,000; Clermont-Ferrand, 103,000.

History.—M. Léon Blum's ministry, the outcome of the elections of April 26 and May 3, 1936, which were characterized by the success of the Front Populaire, was a constitutional government upheld by a parliamentary majority; but it was also the instrument of a revolution, set in motion by its coming, which it made vain attempts to canalize. Its measures of social reform were too hurriedly carried out; and internal dissensions and pressure from outside sources, such as the Confédération Général du Travail (C.G.T.), would probably have led to its fall in the autumn of 1936 if the parties of the Right had not violently attacked the minister of the interior, M. Roger Salengro, who committed suicide. This dramatic episode reinforced ministerial cohesion.

Such was the state of affairs at the beginning of 1937. The financial situation became more and more critical. The ' alignment ' of the franc with the pound and the dollar did not prevent the franc from losing its value, and the measures taken by the government remained ineffectual because disorder continued. The promise to suppress stay-in strikes could not be kept. M. Baréty, a member and former president of the Finance Commission of the chamber, evaluated at 36 milliards the total sums to be borrowed during 1937. The amount spent on armaments was not the only reason for this increased expenditure. The 1937 budget created more than 10,000 new posts. The number of men employed on the railways increased by 80,000, of whom 75,000 were peasants taken away from the land. Devaluation might have had some good results if it had been accompanied, as in Belgium and England, by an energetic policy of price restriction. It was accompanied by nothing of the kind. The violent rise in prices involved the government in a vicious circle of prices and money. It was only possible to raise a loan in England on the security of the gold holdings in the Bank of France. An interpellation of M. P. E. Flandin on Feb. 26 only succeeded in detaching 16 Radical-Socialist votes from the majority. ' The devaluation was the result of an initial failure ', said M. Potut, a Radical deputy. ' The second failure is marked by the rise in prices. The theory of purchasing power is destroyed. If the government wanted to realize its promises, it would have to face a deficit of 55 milliards this year '. ' The combination of circumstances is fatal ', said M. Flandin. ' It is leading to the death of democracy and to dictatorship by the destruction of the middle classes. Anti-capitalism is the ruin of France, for capitalism includes the vast mass of people with small savings.'


Elaine Bickerstaffe]

BRETON LACE MAKERS OUTSIDE THE WALLS OF ST. MALO

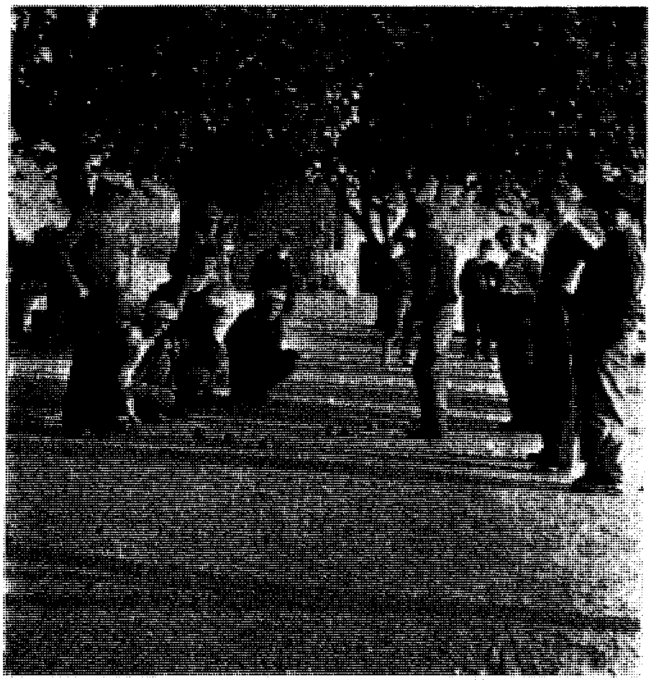
The government, while declaring that it refused to modify its policy, nevertheless made a rapid *volte-face*. It declared that a ' pause ' was necessary, and the cabinet on March 5 decided on a certain number of urgent measures: adherence to the monetary agreement with England and the United States; abandonment of projects of exchange control demanded by the Socialists and Communists; the launching of a big loan for National Defence; the setting up of a special commission to administer the Exchange Equalization Fund; and the restoration of free import and internal movement of gold.

On March 5 the Ministry found itself at the parting of the ways, with, on the one hand, a steep slope going down to the abyss, and, on the other hand, a difficult path climbing up the hill. They chose the latter; it was a decisive moment in the history of the Front Populaire. At one blow the policy of the last eight months was reversed. It became M. Blum's object to inspire confidence in order to realize equilibrium, thus effecting a return to tradition and to financial common sense. The bill authorizing the issue of the National Defence Loan was passed by the Chamber on

March 9 by 470 votes to 46, and by the senate on March 10. The loan was a 4½ per cent. loan issued at 98, and it was safeguarded against fluctuations of exchange, as it was payable in francs, sterling, or dollars at the holder's option. It was easily covered (two milliards were subscribed) but less easily taken up. M. Blum, in spite of M. Caillaux's exhortations, had made no promises with regard to a change of policy. In effect, however, the choice was made, and there was no way of retreat.

Subsequently, extremist groups of the C.G.T. tried to force the government to return to a revolutionary policy. The Clichy riots, provoked by the Communists, appear to have been a manoeuvre with the intention either of regaining control of a government which was threatening to free itself, or else of breaking it. On March 16, the Parti Social Français, whose leader is Colonel de La Rocque, held a social evening for the members of the Party and their families. A rumour, which proved to be false, had gone round that Colonel de La Rocque himself would be present. A gang of Communists, composed chiefly of foreigners and negroes, attacked the hall where the meeting was being held. Five people were killed and 200 wounded, of whom some were rioters and some police; M. Blum's principal private secretary was wounded. The aim of the extremists had been, on the morrow of the success of the loan and of M. Blum's liberal declarations, to bring the government face to face with insurgent popular forces and to compel it to take their side. But power remained on the side of the law, and the government could make no further concessions to a revolutionary rising without irrevocably alienating the Radical party. M. Daladier, in a speech on March 21, said, 'France is resolutely opposed to dictatorship, whether of a man, a party, or a class'.

Henceforth, the days of the Front Populaire Ministry under Socialist leadership were numbered, for the new policy of marking time and of a return to sound rules of finance was a Radical and not a Socialist policy. M. Blum could no longer restrain the influence of irresponsible elements upon his government. The success of the Exhibition, which was to have opened on May 1, should have restored vigour to the economic activity of the country, but the bad spirit shown by the workmen delayed the preparations. The Exhibition became the theatre for the manoeuvres of syndicalism, an instrument of blackmail which was intended to compel the government to submit to a suicidal tyranny. Public opinion became irritated at seeing the formation of a class of privileged persons to whom everything was permitted, who considered themselves beyond the law and who claimed the right to decide about everything, even in the domain of foreign policy.



Elaine Bickerstaffe]

THE PEASANTS OF THE MIDI ENJOY THEIR GAME OF BOWLS ON ANY ROUGH GROUND

Politics since the coming into power of the Blum ministry has been dominated by the question whether Syndicalism is to be an executive agency with its own place but nothing more among the organs of national life, or whether it is to become a substitute for the old, failing Liberal State.

In a speech on May 7, M. Blum pronounced himself unequivocally in favour of a long period of marking time, and rejected the proposals of the syndicalists. He declared himself a partisan, at any rate for the time being, of the authority of the employer and the discipline of labour. He proclaimed that 'France cannot continue to live as it has lived during the past few years. No State can live with the obligation of procuring each year, outside the budget, sums almost equivalent to the normal budgetary receipts'. Rise of prices and diminution of production were the outward signs of the failure of the Socialist policy. No one denies that M. Léon Blum and his Ministry realized some necessary reforms. But certain of these reforms, for example the five-day week, went farther than was intended, and the success of the whole policy was compromised by lack of discipline among the working-classes and by the resulting disorder. M. Kleber Legay, secretary of the Miners' Federation, who, on his return from Moscow, had severely critized the workers' conditions in Moscow, wrote in the *Peuple* of May 7, 'It seems as if a gust of madness were passing through some of us, coupled with an absence of courage among those who see and know, but dare not tell us, whither impossible demands which cannot be satisfied at the present moment may lead us'.

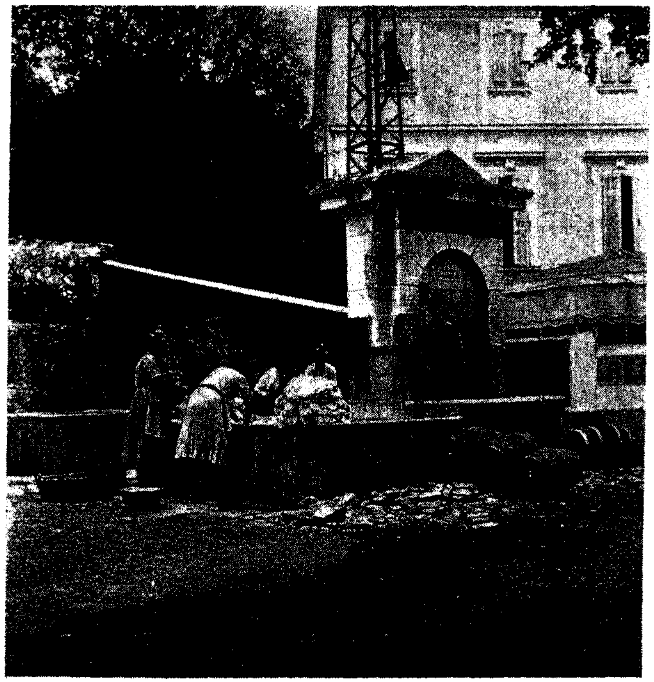
The cabinet resigned because it found itself faced with the inevitable consequences of its policy of excessive expenditure and of repeated calls on an overworked credit which had suffered everything calculated to bring about a failure of confidence. In his speech at Luna Park on June 6, M. Blum tried to put the responsibility for the failure of his experiment on to the resistance shown by the employers, and suggested that far-reaching reforms could only be realized under a Socialist dictatorship. The rapid diminution of gold stocks in the Bank of France, which had fallen, since the coming into power of the Blum cabinet, from 80 milliard Poincaré francs to less than 50 milliard, a figure considered indispensable for national defence, finally determined the Finance Committee of the senate to take the responsibility for a ministerial crisis. The senate, by 188 votes to 72, refused the government the powers granted to it by the chamber, and the next day rejected an amended proposal by 168 votes to 96, with 35 abstentions. During the night of June 20–21, the Blum cabinet handed in its resignation to M. Lebrun, president of the republic.

In the circumstances in which the crisis took place, a Front Populaire cabinet under Socialist leadership could only be succeeded by a Front Populaire cabinet under Radical leadership, and the man asked to form this cabinet could hardly be other than M. Camille Chautemps. M. Blum agreed to the combination, and asked the National

Council of the Socialist party to allow its members to enter the Chautemps cabinet, which could thus be rapidly constituted. There was no difficulty about this. Most of the ministers and secretaries of State retained their functions. M. G. Bonnet, former ambassador at Washington, became finance minister, while other ministers were M. Vincent Auriol (Justice), M. Campinchi (Marine), M. Chapsal (Commerce), M. Février (Labour), and M. Lebas (Post and Telegraphs).

There was only one way open to the new government—the way indicated by the experts' plan for financial rehabilitation ; plenary powers were obtained from Parliament in order to put this into effect. The franc was detached from gold, that is to say, it became a free, floating monetary unit which was no longer convertible into a fixed quantity of gold, like the pound sterling. This was the only means of checking the gold withdrawals which were becoming more and more frequent. The tripartite agreement with the Banks of England and of the United States remained in force. M. G. Bonnet applied himself with great perseverance to the tasks of improving the financial situation and balancing the budget. The pound, which was worth 110·55 frs., went up to 129. The franc, nine months after a reduction of 33 per cent., suffered a further devaluation—not the last, either—of 14 per cent. The result of this constant devaluation is the ruin of the middle class by the reduction, without profit for anyone, of its purchasing power.

The immediate measures taken by M. Bonnet consisted of an increase by 15,000 million francs in the advances made by the Bank of France to the Treasury, new taxes, particularly direct taxes, and increase of old taxes. But the reduction of expenses was rendered useless by the increase in prices which compelled the government, in November, to proceed to a readjustment of officials' salaries. Budgetary equilibrium, which had been established with such great difficulty, was thus perpetually endangered anew. Financial difficulties were further complicated by the need for heavy expenditure on National Defence. In December the franc oscillated between 145 and 150 to the pound. The deficit in the balance of trade, despite some improvement in business, amounted during the year to more than 1 milliard francs a month. The violent reduction in hours of work diminished production and export possibilities to a dangerous degree. A government which includes among its members the authors responsible for the difficulties to be solved, has not as much latitude as could be wished in order to take the needful decisions.



Elaine Bickerstaffe]

WASHING DAY AT EZE, ON THE FRENCH RIVIERA

By the declaration of Rambouillet on Oct. 2, the cabinet affirmed that, contrary to the theories expounded by the Socialist and Communist newspapers, psychological and political, rather than technical, reasons explained the speculative attack on the franc. Tension from outside and the fear of renewed social disturbances were chiefly responsible. The government enumerated the measures they proposed to take in order the better to apply those principles of public order and social discipline on which they had taken their stand since coming into power. But they were constantly hampered in the operation of this programme by the policy of the C.G.T. and the resistance of one section of the chamber. The Cantonal Elections, which took place on Oct. 10 and 17 throughout the whole of France except the Seine, showed a definite retreat from Communism and a success for the parties of order, and indicated approval of the Senate's policy. They consolidated the power of the Radical-Socialist party, and even placed it in a position to do without the assistance of the Communists in Parliament, and even of the Socialists if the Centre and Right parties were not too deeply divided (M. Tardieu against the Parti Social Français of Colonel de La Rocque, etc.).

The success of the Exhibition would have been much greater if the opening had not been delayed by lack of co-operation on the part of the workmen, and if uncertainties abroad had not reduced the number of foreign visitors. The total number of visitors was over 31 millions, but there had been over 35 million at the Colonial Exhibition.

The foreign policy of the Blum and Chautemps cabinets remained, under M. Yvon Delbos, faithful to its principles of collective security, collaboration with the League of Nations, and friendship with Great Britain. The civil war in Spain and the influx of refugees caused great difficulties on the Pyrenees frontier. The policy of non-intervention in Spain, successfully advocated by France and Great Britain, was observed by the French Government, but local authorities, and even certain ministers, favoured the passage of arms and ammunition for the Valencia Government. The Nyon Conference organized the policing of the seas ; and attacks on merchant vessels practically ceased.

France took part in the Montreux Conference for the suppression of capitulations in Egypt. The Pan-Arab agitation aroused difficulties and unrest in Tunis, Algeria, Morocco, and in Syria, with the aid of the Communists.

Following upon Lord Halifax's visit to Germany, M. Chautemps and M. Delbos went to London to confer with the British ministers. The war between Japan and China, the policy of Germany in Central Europe, and the policy of Italy in the Mediterranean were the chief subjects of these conversations. M. Delbos subsequently visited Warsaw, Bucharest, Belgrade, and Prague.

Cardinal Pacelli, Secretary of State of Pope Pius XI, came to France at the end of July as Legate for the consecration of a basilica at Lisieux, and was officially received in Paris with great ceremony. The government wished thus to demonstrate that it has no desire to pursue an anti-clerical policy, and to emphasize the profound impression produced in France by the Papal Encyclicals on Communism and on National Socialism in Germany.

M. Gaston Doumergue, former president of the republic and president of the council, died on June 18.

Trade and Communications.—France, thanks to the quality of her soil and to her climate, is extremely fertile, and the variety of her products is remarkable. The country produces itself about 80 per cent. of what it consumes. The grain harvest varies from year to year between 65 and 98 million quintals. In 1933, it amounted to 98,611,000 quintals, in 1936 to 66,502,000 quintals. Agricultural production in general was poor during 1936, partly owing to unfavourable weather conditions and partly to economic conditions which pressed particularly hardly upon the peasants. As regards wine, France occupies a privileged position in the world. She produces more than any other country: 39,499,000 hectolitres in 1936, with an average of 57 million hectolitres for the three previous years. There was an improvement in 1937, and the production figure rose again to 51,375,000 hectolitres. The value of agricultural products is gradually being restored. In this connexion mention must be made of the recent creation, in Aug. 1936, of the Office du Blé, which has not produced all the results hoped for from it.

France is particularly rich in iron ore, especially since her recovery of Alsace and Lorraine, and she is not infrequently among the foremost countries of the world in its production. Her reserves are about 18 milliard tons. Production in 1936 amounted to 33,208,000 tons, an increase of one million tons over the preceding year. The amount of coal mined diminished somewhat, the figure for 1935 being 47,107,000 tons, while that for 1936 was 46,147,000; but since 1937 it has risen again as a result of measures adopted on Sept. 14, 1937, allowing of departures from the 40-hour week regulations.

Industry occupies 39·1 per cent. of the active population in France, as against 12·1 per cent. engaged in commerce and 35·6 per cent. in agriculture. The textile industry represents nearly a quarter of the industrial production of France. Mechanical industries occupy 935,000 workmen, and rank second among the country's export industries.

Imports and exports for 1937 were valued at (in 1,000 francs) 42,315,548 and 23,935,241 respectively, as compared with 1936 figures of 25,398,044 and 15,453,625.

The deficit for 1936 amounted to 9,944 million francs, an increase of 82 per cent. on the previous year. In 1937, the deficit showed a considerably greater increase, amounting to over 18 milliards. The share of the French colonies in the external trade of the mother-country continued to increase, amounting to 28·5 per cent. of the imports and 33·4 per cent. of the exports.

The total tonnage of the French Mercantile Marine in 1936 was 3,020,442 tons. Total movements of shipping during 1936, entering and leaving harbours, numbered 170,725 ships, a gross tonnage of 143,357,453 tons, an increase over 1935 of 4,390 ships and 1,950,000 tonnage. Passengers taken: 4,979,717.

The movement of shipping in the six chief ports was as follows:

Marseilles and neighbouring ports .	9,251,319 metric tons.
Rouen	8,002,404 metric tons.
Le Havre	5,775,881 metric tons.
Dunkirk	4,600,088 metric tons.
Bordeaux and neighbouring ports .	4,302,201 metric tons.
Nantes and St. Nazaire . .	3,420,735 metric tons.

Railways.—The year 1936 was a bad one for the French railways (about 27,120m. of line). The deficit amounted to 3,977 million francs. During 1937 the government, in hopes of remedying the situation, decided on the fusion of the seven great companies into a Société Nationale des Chemins de Fer, which came into operation on Jan. 1, 1938. Gross receipts for 1937 showed an increase of 2,437,058,000 francs over 1936. Over 2,210m. of line have been electrified, not counting the Paris-Marseilles line, where trains drawn by Diesel-electric engines are in operation.

There are some 384,200m. of roads in France. Autostrades are planned, and one, from Paris to Le Havre, is already under construction. There are about 9,550m. of navigable waterways, of which about 4,035m. are main waterways.

The aeroplanes of the Air-France Company, constituted in 1932, covered in 1936 a distance of 5,973,900m., transporting 66,670 passengers (an increase of 7·95 per cent. over 1935) and more than 1,260 tons of freight.

Finance and Banking.—Since 1936, two devaluations have taken place in France. By the first, on Oct. 2, 1936, the franc lost 33 per cent. of its value, while the second, of June 30, 1937, instituted a new basis, the 'floating franc'. At that time the pound was worth 129 francs; at the end of Dec. 1937 it was oscillating between 145 and 150.

On Dec. 17, 1937, the chamber of deputies voted the Budget for 1938. The figures were:

Receipts . . .	54,600,557,808 francs.
Expenditure . . .	54,599,318,506 francs.

The Budget for 1937, the receipts for which were fixed at 43,481,899,289 francs, shows a deficit of 4,589,268,442 francs.

The National Debt on Dec. 31, 1936, amounted to 355 milliards.

BANK OF FRANCE

Balances on Dec. 27, 1935, Oct. 2, 1936, and Dec. 30, 1936.
(In millions of francs)

	Dec. 27, 1935	Oct. 2, 1936		Dec. 30, 1936
		Before revaluation	After revaluation and depreciation	
Gold holdings . .	66,296	50,218	57,358	60,359
Foreign assets . .	1,121	1,234	1,481	1,481
Total . .	67,417	51,452	58,839	61,840
Advances on bullion .	1,204	1,172	1,172	1,359
Bonds . . .	6,443	7,933	7,933	9,860
Advances . .	3,826	5,635	5,635	4,298
Advances to State .	3,475	18,333	12,298	17,698
Notes in circulation .	81,150	86,027	86,027	89,342
Private deposits .	8,716	6,698	6,698	13,655
Public deposits. .	2,861	2,130	2,130	2,089
In reserve . .	2,861	2,130	1,268	264

On June 24, 1937, the gold holdings in the Bank of France amounted to 54,859 million francs; on Jan. 13, 1938, they amounted to 58,932 millions. Savings Banks balances due to depositors on Dec. 31, 1936, amounted to 34,920 million francs in ordinary savings banks, 23,974 million francs in Post Office Savings banks, making a total of 58,894 millions, as against 62 milliards in 1935. Withdrawals were very considerable during 1936, but ceased during 1937, which ended with an excess of deposits over withdrawals.

National Defence.—Military service is compulsory for a term of 2 years.

Army (in 1936)

Troops stationed in France in peace time	400,000 men.
Total strength in peace time	680,000 men.
Reserves	4,000,000 men.
Maximum strength in war time	8,000,000 men.

Air Force

Total strength	40,000 men.

Navy

Total strength	65,000 men.
Total tonnage	709,000 tons.
Tonnage of ships of the line	221,000 tons.
Tonnage of submarines of the line	84,000 tons.

By a decree of Jan. 22, 1938, General Gamelin was nominated Chief of Staff for National Defence.

Budget figures for 1937 :

Army	5,857,000,000 frs.
Air	1,249,000,000 frs.
Navy	1,811,000,000 frs.

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FRANCO, FRANCISCO (1892–), Spanish general and revolutionary leader, since Oct. 1, 1936, head of the insurgent government in Spain, was born in Galicia. After military service in Morocco, he became a colonel in 1926, and served under the Spanish republic of 1931 in the Balearic Islands, being later transferred to Morocco again. In 1935, he was made chief of staff, and in this capacity attended the funeral of King George V in Jan. 1936. Under the Lerroux-Robles government he became governor of the Canary Islands. On the outbreak of the Civil War in June 1936, he flew to Tetuan, in Spanish Morocco, and there organized the transport of Foreign Legionaries and Moorish troops to the Spanish mainland, whither he soon followed. After the death of Gen. Sanjurjo, Gen. Franco became military leader of the insurgents, and on Oct. 1, 1936, was solemnly invested at Burgos with the titles of ' Commander-in-Chief of the Spanish Army ' and ' Chief of the Spanish State '. He at once began a siege of Madrid, but, largely owing to his detour to relieve Toledo, his expectations of that city's early fall were not fulfilled. On April 20, 1937, he issued a decree, by virtue of which he became the political, executive, and military dictator of a totalitarian State, and on Aug. 5 he assumed the leadership of ' the Spanish Phalanx of Traditionalist and Offensive National Syndicalist Juntas '.

After his march into and conquest of the Basque country in June, he appealed in July to the Powers to grant belligerent rights to the Spanish rebel forces, and on Aug. 27 exchanged congratulatory messages with Signor Mussolini after his capture of Santander. For his later activities in relation to the Civil War, *see* SPAIN and SPAIN, CIVIL WAR IN.

FRANKLIN, EDWARD CURTIS, American chemist; born at Geary City, Kansas, March 1, 1862 ; died at Palo Alto, Calif., Feb. 13, 1937. A biographical note may be found in the *Ency. Brit.*, vol. 9, p. 695. In 1929 he retired from the chair of organic chemistry, which he had held at Stanford University since 1903. The Nichols Medal was presented to him in 1925 on the expiration of his term as president of the American Chemical Society.

FREEMASONRY. The following is a brief survey of the position of Freemasonry during the year 1937 in Europe and the U.S.A.

Great Britain.—The Duke of York was installed as Grand Master Mason of Scotland, Nov. 30, 1936, but upon ascending the English throne as George VI, resigned the office in keeping with old customs. On June 30, 1937, he was invested as a Past Grand Master of the United Grand Lodge of England. He is the fourth British Mason to ascend the throne. A severe loss was the death on Nov. 5 of Sir Philip Colville Smith, C.V.O., who had been Grand Secretary since 1917.

Europe.—The citizens of Switzerland, by a vote of 514,539 to 233,481, on Nov. 28, defeated a proposed amendment to the Constitution by which all secret societies would be forbidden. The bill had been rejected previously by the Swiss Council of State, Senate, and Parliament. Catholic laymen supported Freemasons in this election, sensing the move to an eventual crippling of all rights of free association, such as had followed the suppression of Freemasonry in Italy, Germany, Turkey, Spain, and Brazil under dictatorships. Close ties between Scandinavian and English-speaking Freemasonry have been strengthened through the visits of American Grand Masters to Denmark and Sweden in 1936, where King Christian X and King Gustav V, respectively, are Grand Masters of Masons.

United States.—Improved economic conditions resulted in the reinstatement of approximately 50,000 Master Masons, following suspensions or demissions during recent years. Losses, shown as 144,402 in 1934, were reduced to 66,261 in 1937, leaving a total membership of 2,599,250 among 15,826 lodges. Seven jurisdictions out of fifty (the forty-eight States, District of Columbia, and the Philippines) revealed gains, with many more indicating an increasing number of applicants. Local relief through lodges was increased, aided by improved budgeting of lodge finances. The Grand Lodge of South Carolina celebrated its bicentenary in April, and Texas its centenary in December.

FRENCH ACADEMY. The French Academy held in 1937 four important official functions, at which the following were received into the Academy: Joseph de Pesquidoux, famous for his work on the occupations and pleasures of the countryside in southern France ; Edmond Jaloux, a critic of great renown ; Admiral La Caze, who is known chiefly for his work as minister for the Navy during the War ; and Monseigneur Greute, bishop of Le Mans, who is to keep up the tradition of great prelates within the Academy. René Doumic, one of the most influential of the Academicians and known as a critic, died. Among the numerous prizes and distinctions awarded by the Academy, the most notable are : the *prix de littérature* to Maurice Magre, a poet ; the *prix du Roman* to Guy de Pourtalès ; and the *prix Brieux* to Gabriel Marcel for his plays. (D. S.)

FRENCH EQUATORIAL AFRICA. The rapid development of French Equatorial Africa is hampered by its tropical climate and vegetation and by the scattered and backward nature of the native population. The governor-general, M. Preste, has established a systematic programme of production, administrative reforms, public works, and protection of the natives, and he is steadily pursuing this programme. The cultivation of cotton produces excellent results in the Ubangi, and coffee-growing also promises good returns. In the tropical forest region, timber is the principal export, though the sale of *okoumé* in Germany has become more difficult. The problem of transport remains predominant, but the difficulty of porterage is diminishing bit by bit with the construction of roads, 875m. of which were opened in the year beginning in July 1936. Considerable progress has been realized by the opening of the Congo-Ocean railway from Pointe Noire to Brazzaville. The Congo-Ocean transported, in 1936, 23,548 travellers, 31,000 tons of merchandise for import and export, more than 18,400 tons of merchandise for local use, and quantities of ballast for the harbour works at Pointe Noire. The receipts amounted to 14,173,065 francs. The subsoil is found to be even richer than was thought in copper, gold, lead, tin, manganese, zinc, and diamonds, but the nature of the soil and the climate make exploitation difficult. A most successful fair was held at Brazzaville from July 11 to 23. The governor described the great progress made. Exports, which for the first quarter of 1936 amounted to 191,000 tons, rose to 272,000 tons for the first quarter of 1937.

General Tilho, in a communication to the Académie des Sciences, drew attention to the danger of the 'capture' of the waters of the Logone by the Benue, which would have the effect of accelerating the progressive drying-up of Lake Chad.

The area of French Equatorial Africa is *c.* 912,000sq.m., and the population (1934) was *c.* 3,319,000, of whom about 4,700 were Europeans. (R. PIN.)

FRENCH GUIANA, a French colony in north-eastern South America, including the separate interior Territory of Inini. Capital, Cayenne (pop. 11,704); governor, René Veber. The area, including Inini (area, 25,000 sq.m.), is 34,740sq.m. The population of French Guiana was 29,085 (including 2,934 foreigners) in 1936, with 3,510 in Inini. The colony is administered by a governor and general council, and is represented in the French Parliament. Inini has a separate council. The famous French penal colony, Devil's Island, on the northern border, is administered separately. In Sept. 1937 the French labour arbitration act of 1936 was extended to Guiana by decree. During 1937, the colony showed considerable development, due to the devaluation of the franc, which stimulated gold production. Imports and exports in 1936 totalled respectively 45,343,821 frs. and 26,536,884 frs. Imports, chiefly foodstuffs and manufactured articles, came from France (64·2 per cent.) and the United States (8·8 per cent.). Practically the entire exports, comprising principally 23,726,000 frs. gold and rosewood, went to France. The first nine months of 1937 showed 25 per cent. increase in imports and 10 per cent. in exports. French Guiana has regular external steamer and aeroplane service, 12km. of railroad, 250km. of highways, and good interior waterways. The monetary unit is the French franc.

FRENCH GUINEA: *see* FRENCH W. AFRICA AND THE SAHARA.

FRENCH INDO-CHINA. Two very important measures have been taken in favour of the natives. One of these, by a decree of July 23, 1937, allows young natives who have passed certain examinations to be recognized as French citizens with full civil and political rights, merely by entering a demand for citizenship with the appropriate tribunal. A particular result of this measure will be to eliminate by degrees the French low-grade officials serving in Indo-China. Another measure is the regulation of work on a large scale on lines adopted from France.

In the different countries composing French Indo-China the main features of progress during 1937 have been as follows. In Cochin-China new native schools have been opened. In Cambodia sanitary organization has been developed, and usury, which has prevented the growth of a class of peasant proprietors, combated. As regards Laos, a distant country difficult of access and therefore backward, efforts have been made to improve communications, both by air and by road, with the interior. In North Annam, irrigation of the Nghé An was begun, thereby making it possible to irrigate 86,500 acres and to obtain from this vast area two annual harvests of rice instead of one. In Tonkin, the government did much to alleviate the widespread distress caused by the flooding of the Red River.

Air communications have been speeded up, and the journey from Paris to Saigon can now be accomplished in five days.

The area of French Indo-China is about 285,000sq.m., and the population (1936) was *c.* 23,230,000, of whom about 30,700 were French. (R. PIN.)

FRENCH LITERATURE. The most notable event of the year has been the award of the Nobel Prize for literature to Roger Martin du Gard for the seventh part (in 3 vols.) of his saga: *Les Thibault.* The six previous parts were the somewhat lurid tale of the inner life of a rich family. The three volumes which won the Nobel Prize describe mainly the activities of a group of revolutionaries (to which a Thibault belongs) immediately before the war of 1914. As a work of art, this novel is rather below the high standard of the other volumes; but no doubt its pacifist sentiments touched the prize-givers.

Georges Duhamel also added two volumes to his *Chronique des Pasquier: Le Désert de Bièvres* and *Les Maîtres*: both contain an admirable description of intellectual life in Paris, the first among students, the second among professors. These volumes are, if anything, better even than the first volumes of the series.

Jules Romains also added two volumes to his *Hommes de Bonne Volonté: Mission à Rome,* which is a tale of Church intrigues at the papal court, and *Le Drapeau Noir,* which deals with 1914 and the coming of the War in a more concise and objective way than Roger Martin du Gard. Jules Romains published an important racial political poem, *L'Homme Blanc.*

Not all the French writers, however, have succumbed to the saga fashion. Maurois has turned historian. His *Histoire d'Angleterre* has established itself at once and been highly praised by professional historians for its impartiality (a quality rarely, if ever, reached by a historian writing about his own country), its clarity, and its elegance. But Maurois has not forgotten his earlier trade and has delighted his public once more with a fantastic story: *La Machine à Lire les Pensées.*

Giono writes 'epics' in prose rather than novels: *Bataille dans la Montagne* describes tremendous floods in an alpine valley and contains some descriptions of nature in convulsion which are among the best in French literature.

Malraux, from his adventures in Spain, has also constructed an 'epic' narrative, *L'Espoir,* relating, with an astonishing mixture of enthusiasm, objectivity, and extreme realism, incredible episodes of the Civil War.

Céline, to-day the undoubted master of the realist tradition, has published a wild and violent attack against the Jews and the Soviets, set in the form of an extravagant lyrical essay, *Bagatelles pour un Massacre,* worthy of his previous successes, *Mort à Crédit* and *Voyage au Bout de la Nuit.* His power in the use of popular or imaginative language gives him a lasting value.

At the other end of the intellectual world, Paul Valéry has published a very sophisticated piece of high literature, *L'Homme et la Coquille*. His appointment at the Collège de France as professor of poetry is something of a national event.

Giraudoux has published a very successful play *Electre*, one more of those adaptations from the Greek drama into modern moods which are now a fashion. Another famous novelist, Mauriac (who this year published a second volume of his *Journal*), has also tried his luck on the stage with *Asmodée*.

On the whole, the year 1937 has been hard on the literary market, and the sale of books has sunk to its lowest level since 1920. Few new writers have had a fair chance.

Some events are worth remembering. The third centenary of the publication of Descartes's *Discours de la Méthode* has been solemnly celebrated. Few people realize that the *Discours* is perhaps the grandest piece of literary prose there is in French. The *Correspondance de Descartes*, published this year, with the *Discours*, in one volume (Pléiade editions), will make the reader feel that Descartes was one of the most human of men. Add to that Ch. Adam's *Descartes, ses amitiés féminines*. Another event is the foundation of the Académie Mallarmé, of which much will be heard: Paul Valéry, Edouard Dujardin, St Pol Roux, Fargue, Valéry Larbaud, Cocteau, and Vildrac are members.

Several well-known writers died during the year: Eugène Montfort (a 'realist' novelist); Elie Faure (an essayist); Francis de Croisset (a 'boulevardier' dramatist); Elie Halévy (whose five-volume *Histoire du Peuple Anglais au XIX*^{e} *siècle* is invaluable: the last two volumes cover 1895–1914).

Thibaudet's *Histoire de la Littérature Française de* 1789 *à nos jours*, published late in 1937, should be recalled as the most thought-provoking book of its kind in French, in which full justice is done at last to Balzac, Baudelaire, and Hugo.

A further choice of good reading matter might be made from the following:

Novels.—Jacques Chardonne, *Romanesques*; André Billy, *L'Approbationiste*; G. de Pourtalès, *La Pêche miraculeuse* (awarded the French Academy's prize); Jean Prévost, *La Chasse du matin*; Bernanos, *Nouvelle Histoire de Mouchette*; Henri Pourrat, *Les Contes de la Bûcheronne*; Vladimir Pozner, *Le Mors aux dents* (a tale of Baron von Ungern); Denis Saurat, *La Fin de la Peur*; Alexis Curven and Jean Sarrazin, *Bourg-le-Rond*; Monfried, *L'Homme à la main coupée* and *Le Roi des Abeilles*; Drieu la Rochelle, *Rêveuse bourgeoisie*; Paul Morand, *Les Extravagantes*; Marcel Arland, *Les Plus Beaux de Nos Jours*; Albéric Calmet, *Pont Carral*; Madeleine Ley, *Olivia*; André Thérive, *Coeurs d'Occasion*; Kessel, *La Rose de Java*; Marouzeau, *Une Enfance*; Raymonde Vincent, *Campagne* (prix Fémina); Plisnier, *Faux Passeports* (prix Goncourt); Rogissart, *Morvale* (prix Renaudot).

Essays.—Brunot, *Histoire de la Langue française sous la Révolution et l'Empire*; Dubos, *Approximations* (*VII*^{e}); Jacques Chardonne, *L'Amour c'est beaucoup plus que l'amour*; G. Duhamel, *Défense des Lettres* and *Deux Patrons* and *Vie et Mort d'un héros de roman*; L. Daudet, *La tragique existence de Victor Hugo* (exciting but unreliable); Jean Schlumberger, *Essais et dialogues*; Paul Claudel, *Un Poète regarde la croix*; André Suarès, *Rêves de l'Ombre*; Henri Massis, *Le Drame de Marcel Proust*; Magre, *Inde, Magie*; Jules Romains, *Visite aux Américains*; Henriette Psichari, *Renan d'après lui-même*; Bourdelle, *La Sculpture et Rodin*; Betz, *Rilke Vivant*; Couchoud, *Jésus, le Dieu fait Homme*; André Gide, *Retour de l'U.R.SS.* and *Retouches*; Lévy-Bruhl, *Morceaux choisis*; Henri Pourrat, *Le Secret des Compagnons*; Alain, *Les Saisons de l'Esprit*.

Autobiography.—André Gide, *Journal* (in complete works chronologically arranged); Julien Benda, *La Jeunesse d'un Clerc* and *Un Régulier dans le Siècle*; Ella Maillart, *Oasis interdites* (travels in Central Asia). Romain Rolland's *Journal* is deposited in a Swiss library, and will be available in twenty years' time. (D. S.)

FRENCH WEST AFRICA AND THE SAHARA.

French West Africa was less disturbed than North Africa by the repercussion of events in Europe in 1937 and the application of social legislation. Only a few riots were recorded, unimportant except for that at Dakar among the black French electorate. On the other hand, economic difficulties were much in evidence, and the great development effort undertaken by Governor-General Brévié (now in Indo-China) and continued by his successor M. de Coppet, was paralysed by the poverty of resources and the financial crisis.

The minister for colonies, M. Marius Moutet, who inspected Senegal and Mauretania in the autumn of 1936, visited Sudan, Dahomey, and Togo from March 23 to April 21, 1937. His journey demonstrated the rapidity and ease of air and land transport. In two days he went from Paris to Gao, on the Niger, 2,500m., by Air-France and Air-Africa planes. He returned convinced that the first condition of economic development in the Sudan is the increase of the population and consequently the growth of foodstuffs. The creation of a 'black peasantry', advocated by M. Delavignette, to-day director of the École Coloniale, is therefore one of the first items of the economic programme. 'It is through the individual, through the man, that Africa must progress', said M. Moutet on his return. 'The population of French West Africa can increase in one generation from 15 to 30 millions, on condition that we pursue a policy of health measures, native education, improved agricultural methods, and development of the soil'. This is one of the objects of the great works undertaken on the Upper Niger, the barrage at Sansanding, and the Sotuba canal, which is to irrigate the ancient kingdom of the Macina, formerly rich and populated, to-day suffering the encroachment of the Sahara. This region is particularly favourable for the cultivation of cotton of excellent quality, the first bales of which are now beginning to arrive on the European markets. But at the same time attempts are being made to develop the cultivation of foodstuffs (vegetables, rice, cereals) in order to nourish the black population.

Senegal, Mauretania, and the colonies on the Atlantic seaboard have suffered from the decrease in price for oil-products on the European markets. Peanuts and copra are their chief products. The price of peanuts, the one source of wealth of Senegal, has gone down considerably; customs dues on foreign peanuts entering France have been reduced by one-half, licences for the import of foreign peanuts have increased excessively, costs of transport have gone up, and an export duty has been imposed. On the other hand, articles imported from France have gone up, so that the native has had to suffer too from events in the mother-country. Trade nevertheless is increasing; for example, in Guinea (total of 189 million francs in 1936, chiefly gold and bananas). New markets have allayed fears of over-production of cocoa and bananas. Attempts to apply social legislation were quickly abandoned; it was decided that such legislation would be impracticable in this country. Decrees of Sept. 29 foreshadow agreements with a view to balancing production in the mother-country and in overseas territories and to allotting the outlets afforded by the internal market.

Communications with North Africa by aeroplane and car, the improvement of the Saharan tracks, and the exploration of the great desert, combined with increased safety of travel in it, have all formed the object of successful efforts on the part of both military and civil authorities in French West Africa and in Algeria. The well-defined track from Algeria to the Gulf of Guinea by El-Golea, Tamanrasset, Agadès, and Zinder makes it possible to cross the Sahara in comfortable cars. There are quite well-organized hotels on the route. A weekly service runs to Tamanrasset, to which travellers are drawn by memories of a saint and of a hero—Père de Foucault and General Laperrine. The Hoggar has become a tourist centre (Tropical Transport Service of cars). The Air-Africa aeroplane is even quicker. An Algerian trade mission visited the regions of the Niger in 1937. Throughout the year no incident disturbed the security of the desert. Financial reasons delay the construction of the trans-Saharan railway. But the Sahara is definitely conquered, and is becoming the backbone of the French African empire.

The area and population in 1934 were approximately as follows: area, 1,604,000sq.m.; population, 14,469,000, including 42,350 Europeans. (R. PIN.)

FRIENDS, THE SOCIETY OF. In Great Britain the Society of Friends has just over 400 meetings (*i.e.* congregations), the number of members being 19,257, a very slight decrease on the total for the preceding year. There are 106 Sunday Schools and morning classes, which also represents a small decrease. According to the report at a world conference held in America, the Friends comprise a scattered society made up of about 160,000 members the world over, of whom about 90,000 are domiciled in the United States.

The 269th yearly meeting was held at Bristol in May, this being one of only six or seven occasions when the assembly has taken place out of London, and the first where the West Country has been chosen for the gathering. This is the oldest of all May Meetings, and the reason for changing the venue from the metropolis was the unusual influx of visitors for the Coronation.

The subject of the Swarthmore Lecture at the yearly meeting was ' Religion and Culture '. Other subjects discussed were: ' The Task of the Christian Church in the World To-day ', and ' Unity with Other Churches '. Jordans Meeting House, near Beaconsfield, Bucks., has been thoroughly restored and slightly enlarged during 1937.

FRUIT PRODUCTION. In Great Britain, where orchards occupy 258,000 acres, the trend of production is definitely upwards, as many new orchards are coming into bearing. Apples remain the leading fruit, with an annual production estimated at 511,000 tons—more than the production of either Canada or Australia. Only 25 per cent. of this fruit are cider apples, fully 60 per cent. consisting of cooking apples, of which Bramley's Seedling, Lord Derby, and Grenadier are the important varieties. Dessert apples are now being widely planted, comprising Cox's Orange Pippin, Worcester Pearmain, and Laxton's Superb, and in a few years supplies of dessert apples should much increase. Scientific research has indicated the correct methods of soil nutrition to give crops in the wet climate of England. Dressings of potash have to be made every year and supplies of nitrogen added when needed. Where the orchards are down to grass, heavy dressings of nitrogenous fertilizers are needed.

It is the practice to winter wash the trees with tar-oil sprays, to kill hibernating insects and eggs of insects. Summer sprays consist of three or more sprays of lime-sulphur, with nicotine or lead arsenate added where insect pests are present. More and more growers are adopting these modern methods, and the volume of high-quality fruit is increasing.

It is the practice to place into ' gas ' store a proportion of the crop for sales at Christmas and later, and over a hundred of these gas stores, with a capacity for 1½ million bushels, have been erected on the farms in recent years. Packing-houses are increasing, also the supply of skilled packers, so that the volume of well-packed box apples to the markets should continue to increase. Growers are joining together to form small groups for marketing consignments under one trade-mark, and this will help in building up a better marketing organization.

Plums.—The plum crop in 1937 was definitely good. Culinary varieties—Czar and Pershore—predominated, but the demand for these for cooking, jam-making, etc., has declined. Victoria plums, another variety largely grown, found a ready sale for canning, cooking, and for dessert. There is a great demand for dessert plums which is not satisfied at present except by imported plums. Since the plum trees have been sprayed with tar-oil washes, the leaves have kept clean of insects and borne good annual crops, and heavy annual crops may be expected.

Small Fruits (52,800 acres).—The strawberry crops in England are slowly improving, though many of the favourite varieties have succumbed to virus disease. Healthy stocks of the Royal Sovereign and Sir Joseph Paxton—two good-flavoured favourites—are hard to find, so plantings have increased of Oberschlesian and Tardive de Leopold. These varieties seem to carry the disease without losing much of their cropping capacity. Research on strawberries is continuing at several centres, and gradually healthier stocks are to be made available to the planter. By dipping ' runners ' in hot water before planting, to kill insects, and by dusting growing plants with sulphur and nicotine, the best growers are able to maintain a good bed for three years and gather crops of two tons to the acre. This fruit ranks next to the apple in importance, the acreage being 24,625 acres.

Other small fruits grown include the gooseberry, raspberry, red and black currants, the loganberry, and the cultivated blackberry. Of these, the gooseberry is in less demand than formerly, for less is needed for jam-making since pectins are being used for ' setting ' purposes. Black-currants for cooking and jam are still very popular and widely grown. The canning industry has made a demand for loganberries, of which the acreage has much increased. Similarly, the area of cultivated blackberries (Himalaya Giant variety) has increased—much of the fruit is sold in the fresh fruit market.

Home production of fruit is not sufficient to satisfy the demand, since there are imported into Great Britain more apples, pears, citrus fruit, raisins and currants, and canned fruits than into any other country.

British Empire.—Since Britain in 1932 imposed duties on imports of fruit of foreign origin while allowing free entry to that of Empire origin, there have been developments of fruit production in many Empire countries. Australia, Canada, and New Zealand have each increased their export trade, and the total import of apples from the Empire countries has risen from 3 million cwts. in 1931 to over 4 million cwts. in 1937. Likewise, the pear industries have also developed, imports of these rising from 250,000 cwts. in 1931 to 500,000cwts. in 1937. The fruit industries in Australia, South Africa, and Canada have also expanded to supply the canning factories—in need of fruit for the expanded export trade. Imports of canned fruits from Empire countries have risen from 34,000 tons (1928) to over 70,000 tons in 1936.

Italy.—There has been a noticeable improvement in the fruit industry in Italy, both in production and in building up packing stations to grade and pack fruit for export. Well-packed fruit of Italian origin—cherries, pears, peaches, plums, and grapes—is sold in many European markets. Exports to English markets have much increased in recent years.

United States.—The fruit industry of the United States of America is very efficient in production, and has a magnificent organization for marketing the fruits, not only throughout the States, but in most countries of the world.

During 1937 internal trade depression reacted unfavourably on the home fruit industry, and tariff and other restrictions made it more difficult to maintain the export trade at its full height. For example, the supplies of apples to the United Kingdom dropped from 3½ million cwts. to 1½ million cwts. in 1936. The export of pears has been fairly well maintained and that of oranges has been increased. The export of canned fruits to the United Kingdom markets has not been materially different, having shown a slight gain. The quality of fruits produced in apples, citrus fruits, and pears is as high as before, and methods of grading and packing are even better. Much research work in fruit production is in progress in the States, and the results indicate that more efficient spraying is necessary to encourage the production of clean fruit.

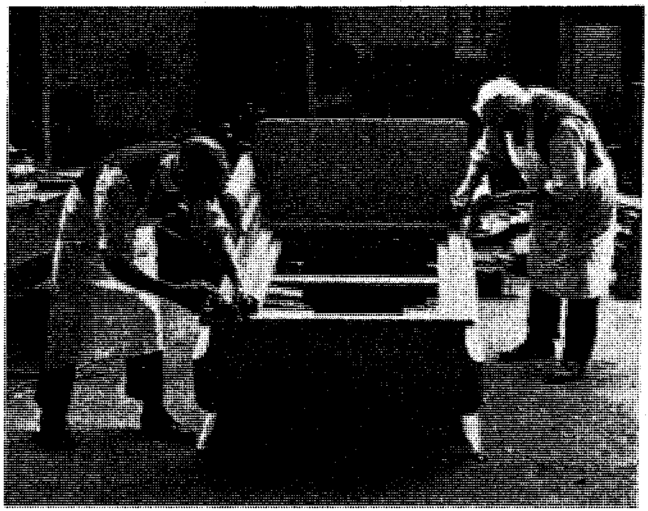
Research.—During 1937 the discussions by experts on nutrition emphasized the need for a greater consumption of fruit by all classes of people in all industrial countries. Only trade depressions prevent the rate of consumption rising and perhaps rising rapidly, and as soon as this passes, the demand for fruit should be much stimulated. The increase in demand is most apparent for dessert varieties of fruit that can be eaten raw, and for this purpose specialized varieties are needed that have been grown clean and free of blemishes and other defects. More specialization in fruit production has been made in all countries, and growers are applying the results of scientific research.

The year 1937 witnessed a strengthening of the organization for research into fruit production in the United States of America, in Canada, Australia, Great Britain, and other countries of Europe, and it would seem that these research stations are necessary to help the grower to overcome the many difficult problems associated with the production of the clean and high-quality market fruits. (H. V. T.)

FUELS: *see* COAL; GAS; PETROL; PETROLEUM; and SYNTHETIC FUELS AND LUBRICANTS.

FURNITURE INDUSTRY. In Great Britain there were several months of set-back in the manufacturing trade at the end of 1937 for no known cause, for, though speculative building is declining, slum clearance and corporation housing schemes are extending rapidly, and provide a market for manufactures of cheap furniture. Imports of furniture timber during the first 11 months of 1937 were: walnut, 316,000cu.ft.; oak, 13,550,000cu.ft.; mahogany, 980,000cu.ft.; plywood, 13,074,315cu.ft., and veneers, 272,429cwt. There were 140,000 insured workers in the production side of the furniture trade, according to the ministry of labour statistics.

British manufacturers produce large quantities of antiques in the style of Adam, Sheraton, Chippendale, and others, while in Paris or its vicinity are upwards of 2,000 manufacturing firms, the value of whose exports, largely productions of traditional periods, amount to a considerable sum.



Betty Joel]

CRAFTSMEN AT WORK IN A MODERN FURNITURE FACTORY

In the United States the furniture industry has assumed large proportions. There are over 3,000 recognized manufacturers who employ nearly 130,000 workers, and the annual value of their products is about £90 millions. It is estimated the percentages of the different kinds of wood used in the manufacture of furniture at the present time are: birch, 11 per cent.; walnut, 2½ per cent.; mahogany, 2 per cent.; gum, 27 per cent.; maple, 10 per cent.; oak, 12 per cent.; all other hardwoods, 35½ per cent. To-day there is about an even division in the use of walnut and mahogany, with walnut leading slightly in the upper-priced articles. For less expensive furniture, a great deal of gum and birch is used.

FURS. The outstanding development in the fur trade of recent years has been the growth of the South-West African Persian lamb skin trade, which six years ago totalled 96,000 skins, and in 1937 reached 1 million. The silver fox trade has also increased considerably, due very largely to the breeding of foxes for this purpose. To-day, there are about 15,000 breeding establishments in the Scandinavian countries, about 6,000 in Canada, and around 100 in Great Britain. The London fur market was the important centre in 1937 for the silver fox trade, and also transacted a large business in Russian, American, and British Colonial furs.

The Russian fur trade transacted an international business with the United States, Great Britain, and France, the largest buyers at the two auction sales held in Leningrad in March and July. Australia and New Zealand sold about 80 per cent. of their respective catches of rabbit skins to the United States, valued at around £1,800,000. The China fur trade came to a standstill in August, but by that date most of the 1936–37 production of furs and skins, valued at about £6 millions, had been sold and shipped to the United States, the market for the larger proportion. The 1937–38 season for furs from China was practically abandoned because of the Japanese invasion of China.

Taken as a whole, the world's fur trade in 1937 was less than in 1936. Import restrictions, quotas, and prevailing 'exchange' limitations prevented the free flow of furs in international trade. *See* also FASHION AND DRESS.

G

GALLWITZ, MAX VON, German soldier; born at Breslau, May 2, 1852; died at Naples, April 18, 1937. He had served in the Franco-German War, and when the World War broke out he commanded the reserve corps of the Guard during the occupation of Namur. On the Eastern Front he took part in the battle of the Masurian Lakes. In the autumn of 1915 he commanded the Eleventh Army in Serbia, and was on the Verdun front from Feb. to Sept. 1916. In 1918 he formed a new army, with which he put up an obstinate resistance during the German retreat.

From 1920 to 1924 he sat in the Reichstag as a representative of the Nationalist Right.

GALWAY, GEORGE VERE ARUNDELL MONCKTON-ARUNDELL, 8th Viscount (1882–), British imperial administrator, eldest son of the 7th viscount, was born March 24, 1882, and educated at Eton and Christ Church, Oxford. In 1910 he twice unsuccessfully contested Scarborough in the Conservative interest. He joined the First Life Guards in 1904, becoming captain in 1911, and served with them in the World War, winning the D.S.O. in 1917. In 1919 he was awarded the O.B.E. and promoted lieutenant-colonel, and three years later married the Hon. Lucia White, younger daughter of the 3rd Baron Annaly. From 1925 to 1929 he was in command of the Life Guards. Succeeding his father in 1931, he became two years afterwards Colonel Commandant of the Honourable Artillery Company. In Oct. 1934 he was appointed to succeed Lord Bledisloe as Governor-General of New Zealand, and assumed office on April 12, 1935, receiving the G.C.M.G. He became a Privy Councillor in May 1937.

GAMBIA, a British crown colony and protectorate in West Africa, extending up the banks of the river Gambia as far as Yarbutendi. The governor is Sir Wilfrid Thomas Southorn, K.C.M.G., K.B.E., appointed in 1936, and the capital is Bathurst. The area is *c.* 4,132sq.m., and the population (estimate, Dec. 1936) 197,811. The colony, as distinct from the protectorate, comprises Bathurst, Georgetown, and some adjoining land, with a total area of 69sq.m. and a population (1931 census) of 14,370. Elementary and secondary education are provided by missions with government grants, and a committee of Mohammedans runs the Mohammedan school. There is a government manual training centre and a school for the sons of chiefs at Georgetown. The chief exports are ground-nuts, hides and skins, and palm kernels. Total exports for 1936 amounted to £501,238, and imports to £582,476. There is no telegraph system, and no railway; internal communications being maintained by four wireless stations, and mails being conveyed by government river steamers. The Bank of British West Africa is the only bank, and West African notes and currency are in circulation.

GANDHI, MOHANDAS KARAMCHAND (1869–), Hindu Nationalist leader. For a biography, *see Ency. Brit.*, vol. 10, p. 15. In April 1930 he inaugurated a campaign against the Salt Laws, for which he was interned on May 5, being released in Jan. 1931 to attend the Round Table Conference as a delegate. From Jan. 1932 to May 1933 he was again imprisoned. After the elections for the provincial legislatures in 1937 had resulted in the Congress Party gaining a majority in six provinces, he recommended it to accept office if assurances were given that the governors would not use their veto or set aside the advice of the ministers 'in regard to their constitutional activities'. At Madras on Jan. 22, 1937, Mr. Gandhi announced his retirement from Indian politics. On Aug. 4 he visited the Viceroy (*see* Linlithgow, Lord) and, besides discussing rural uplift and the condition of the peasantry, was instrumental in the raising of the ban against the entry of the agitator, Abdul Ghaffar Khan, into the North-West Frontier Province; then later in the same month he was advocating total prohibition for all India, to come into effect within three years of the establishment of the provincial Congress ministries. He contended that the addiction to drinking in India was very small, and that therefore no deterrent analogy could legitimately be drawn from the failure of the American experiment.

GARDNER, PERCY, Litt.D., LL.D., British archæologist; born at Hackney, London, Nov. 24, 1846; died at Oxford, July 17, 1937. A biographical notice of him appears in the *Ency. Brit.*, vol. 10, p. 24. Dr. Gardner was, in a very large measure, the father of the present archæological school at Oxford, and his work in numismatics was hardly less outstanding; but, apart from these interests, he was a very considerable theologian. After his retirement from his Oxford professorship he published: *New Chapters in Greek Art* (1926); *Modernism in the English Church* (1926); *The Principles of Christian Art* (1928); *The Interpretation of Religious Experience* (1931); *Autobiographica* (1934). His wife Agnes, sister of his friend Professor J. S. Reid, died in 1933, and he had no children.

GAS. Developments in the production and utilization of gaseous fuel are giving a new emphasis to the functions of gas manufacture and supply in relation to the general political economy. Present-day fuel requirements are more exacting than has been customary in the past, and it is increasingly realized that gaseous fuel represents a means of combining the desired degree of control, flexibility, and cleanliness characteristic of a high-grade fuel with economy in the use of natural resources.

In common with most commodities, gaseous fuel showed a general set-back in consumption during the period of depression in world trade, the amount of the set-back being roughly related to the degree of economic disturbance of the particular State; but statistics made available during 1937 show that recovery has progressed to the point at which new high records have been made.

Great Britain, possessing practically no home sources of oil but plentiful supplies of coal, has met the increased requirements of gaseous fuel by the carbonization of more coal in gasworks and by the purchase of increased quantities of coke-oven gas. The total quantity of gas sold in 1936 by authorized undertakings was 4·8 per cent. greater than in 1935, 1,040,000 tons more coal being carbonized, and 3,875 million cu. ft. of additional gas being purchased from coke ovens. The total quantity of gaseous fuel sold

Gas, Light & Coke Co.]

A CONVECTOR HEATER DESIGNED TO GIVE SUBSIDIARY HEAT IN ROOMS ALREADY PROVIDED WITH A FIRE

passed the 300,000 million cu. ft. mark for the first time, coke-oven gas purchased and resold amounting to over 24,000 million cu. ft.

In Germany, also, coke-oven gas is playing an increasing part in the supply of gaseous fuel, having increased from 18 per cent. of the whole in 1924 to 70 per cent. of the whole in 1936, the quantity of gas manufactured in gasworks being about the same in both years. Thus it may be said that the entire increased demand for gaseous fuel has been met by collecting and distributing surplus gas from the coking industry. A particularly interesting development is the successful attempt to make adequate use of the large deposits of lignite, the coal resources of Germany being represented more largely by these younger coals than by the rich bituminous and anthracitic coals typical of the U.S.A. and Great Britain (*see* COAL: WORLD PRODUCTION). Lignites are now being carbonized at low temperatures for the production of tars to be hydrogenated to motor spirit, and gasified in steam and oxygen under a pressure of several atmospheres, both for the production of town gas and for the production of gas to be used in the synthesis of motor spirit and oils. (*See* also PETROL; PETROLEUM; SYNTHETIC FUELS AND LUBRICANTS.)

In the United States, on the other hand, as indeed might be expected of a nation possessing and exploiting such a vast natural wealth of petroleum, the most striking advance in gas output has been in the amount of natural gas distributed both by pipe line and compressed as 'bottled gas'. In 1936 natural gas represented 68 per cent. of the energy supplied in gaseous form to domestic and commercial consumers. 'Bottled gas', that is, propane and butane liquefied under pressure in steel cylinders, is supplied direct to industrial and domestic consumers, and also to gas companies for distribution through mains in the smaller communities. The amount sold direct to domestic consumers in 1936 was equal in heat energy to some 10 per cent. of the total of manufactured gas, and still larger quantities are available both from the petroleum wells and the refineries. At the same time, the manufactured gas industry records an advance of 6 per cent. in its output, as compared with the previous year, the increase being for commercial and industrial purposes and for house heating. Of the total quantity sold by the manufactured gas industry, 40 per cent. was water gas, 13·6 per cent. coke-oven gas, 7 per cent. retort coal gas, and the remainder oil gas in various forms obtained by processing either oil, natural gas, or refinery gases.

As may be seen from the foregoing, it is often difficult to draw any definite line of demarcation between the gas industry, the fuel industry, and the chemical industry of a country, and this interweaving of interests is well exemplified by the production of methanol from water gas, which has in turn been produced from coke obtained by the carbonization of coal and by the synthetic chemical industry which has been built up, largely in the U.S.A., to produce solvents, resins, and numerous other substances, such as synthetic rubber, by heat treatment and chemical treatment of natural gas.

The production of fuel for motor cars from indigenous resources is the concern of several European countries, Germany leading in the production of liquid fuels from coal, but also encouraging the use of gas compressed in cylinders, while France and Italy are displaying considerable interest in the generation of gas from charcoal or coke by a producer carried on the vehicle.

These, however, are special developments of gaseous fuel caused to some extent by abnormal circumstances, while the real expansion in the use of gaseous fuel is in substitution for solid fuel in industry, in large-scale space heating and for house heating and domestic hot water. Development in these directions is, not unnaturally, leading to an increased interest by those countries relying upon coal in the possibilities of complete gasification. In Australia, the Metropolitan Gas Company of Melbourne has operated for 12 months a small-scale complete gasification plant, which produces a gas having a calorific value slightly above 300 B.Th.U. per cu. ft. For general use, this gas requires enrichment by carburetting with oil, but the high-pressure process developed in Germany by the Lurgi Company brings about enrichment by the synthesis of methane within the generator.

Improvements in the design of appliances and a greater demand for automatic operation and control have led to more intensive study of the combustion characteristics of gas and the effect of minute traces of impurities. The work of Fulweiler in the U.S.A. and of Hollings in Great Britain has elucidated the factors affecting the production of gummy deposits, and, although the offending substance, nitric oxide, is present only to the extent of a few parts per million, practical methods of preventing the deposition of gum have been recorded. In Great Britain there has also been a notable advance in the extent to which gas is treated for the removal of the small quantity of sulphur compounds remaining after normal purification. Such processes are generally associated with the recovery of benzole, but there have also been important developments in catalytic processes having the same object in view.

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GAY, WALTER, American painter; born at Hingham, Mass., Jan. 22, 1856; died in Paris, July 15, 1937. A brief biography may be found in the *Ency. Brit.*, vol. 10, p. 80.

GEDDES, SIR ERIC (CAMPBELL), British industrialist and politician; born in India, Sept. 26, 1875; died at Hassocks, Sussex, June 22, 1937. *See*, for a biography, *Ency. Brit.*, vol. 10, pp. 84–85. After his return to the world of business, his name was not often in the public eye, but his interest in the development of aviation remained active to the last. He married, 1900, Gwendolen Stokes, and had three sons.

GEMS AND PRECIOUS STONES. The year 1937 witnessed no startling find of gems, nor the production of any outstanding ' gem of the year '. Fashion is still rather shy of coloured gems, favouring ornaments of platinum-mounted diamonds. Whether this is due entirely to a wave of modern taste demanding a monochromic effect in ornament, a scarcity of fine-coloured stones, or merely the fickleness of public taste, it is impossible to say. Jewellers have made great use of the baguette or baton-cut diamond to produce pattern and variety in design, and this has definitely reduced the demand for coloured gems of moderate size and quality. Fine specimen stones will always secure attention and purchasers, but others remain at the mercy of the market.

World Production.—The Colombian mines, being shut down has reduced the supply of emeralds of good quality. A few stones were produced at Leysdorp, South Africa, and there is news of a Swiss company having reopened the Habachthal mine in Austria, but no details of production are available. Fine emeralds maintain a high value, as do rubies, from sheer scarcity. The ruby production from the Mogok district in Burma, which amounted to about 30,000 carats in 1934, including the finds of native and local miners, continued this activity, but the death on Nov. 9, of Lieut.-Colonel J. F. Halford-Watkins, of Burma Mines, Ltd., a great local character and an eminent gemmologist, is certain to have an adverse effect on output. Burma produces annually about 105 tons of jadeite, most of which goes to China for working and carving. The value is about 3,000 rupees a ton. The regular output of sapphires approximates 1 million carats from Kashmir. The year's find in Queensland, Australia, is valued at £3,500. The use of amber received attention in Germany, national propaganda being aimed at a greater consumption for ornamental use. To counterbalance a drop in exports, chemists are seeking commercial and industrial uses for amber and its derivatives. The output at Samland, in Prussia, is steady at about 1,350 troy pounds annually; additionally about one-fourth of that amount is mined in Burma.

Research.—Two new instruments of value to students were introduced during 1937: a gem magnifier, by Leitz of Wetzlar, which facilitates the internal examination of faceted stones, and a simplified and smaller refractometer by Rayner and Keeler of London. In view of its increasing popularity as a gem, an exhaustive study was made of the zircon by B. W. Anderson and C. J. Payne, to which Prof. Dr. Karl F. Chudoba added the results of important investigations and recent discoveries explaining ' wide diversities in the physical properties ' of the stone.

Dr. Reinhard Brauns, author of *The Mineral Kingdom*, distinguished gemmologist of Bonn University, died on Jan. 28, 1937.

BIBLIOGRAPHY.—*The Gemmologist's Pocket Compendium*, by Robert Webster, F.G.A. (A. TR.)

GENETICS. The scope of researches included under the term genetics has continued to widen very markedly during the past year, and the use of genetically controlled materials and genetic techniques by biologists in general has developed greatly. The latter phase has been most marked in cancer research, as pure strains of mice and rats differing widely in susceptibility or resistance to the spontaneous occurrence of tumours of various types are now available. The uniformity of behaviour within strains and the great diversity between them enables more precise results to be obtained with fewer experimental animals. One striking development has been the discovery that mice of resistant strains develop a higher proportion of breast tumours if suckled by females of a susceptible strain, and that, conversely susceptible strains are much more resistant if fostered on resistant females. This experiment has been carried a step farther by the removal of fertilized eggs from susceptible females, and their implantation in resistant females. At the time of the last report, though many of them were past the earliest cancer age, none had yet developed tumours, but enough of them had not lived long enough for a definite statement to be made on their degree of resistance.

In applied genetics, the possibilities have been realized of using colchicine to double the chromosome number. When wide crosses are made between distinct species or genera, the hybrid progeny are usually sterile. Often their sterility is attributable to failure of pairing between the chromosomes of the two parents at the time of germ-cell formation. This prevents the hybrids from forming functional gametes or germ cells. When the chromosome number is doubled in such hybrids, each chromosome obtains a completely homologous mate with which it can pair, and, in plants, such doubled (allopolyploid or amphidiploid) hybrids are usually quite fertile. Doubling often occurs spontaneously, and it has also been produced by heat shocks and, in certain plants, by decapitation. Colchicine appears to provide a new, easily applied method. It therefore promises to be of wide use in plant breeding. At Harvard University a Foundation has been established for the production of tree hybrids. In Canada, tree breeding work is being undertaken in combination with plant hormone treatments which stimulate root development on cuttings and thus enable sterile hybrid varieties to be propagated vegetatively or asexually. The hybridization of wheat with various related species of grasses is being continued in the United States, Canada, and Soviet Russia, in particular, with fair prospects that large-seeded, drought-resistant types of grasses or cereals suitable for semi-arid areas may be developed. The U.S. Department of Agriculture in its 1936 and 1937 Year-Books has given a most complete account of genetic methods and results in plant and animal breeding. Considerable progress has been made in various countries in the breeding of disease-resistant varieties of wheat and bananas, as well as less spectacular improvements in many crops.

Outstanding contributions to knowledge of evolution are the demonstrations from salivary gland studies of the importance of inversions of parts of chromosomes in differentiating geographical races, physiological races, and species of *Drosophila*. Cytogenetic-systematic studies on Iris species of North America are the nearest equivalent work on plants. Dobzhansky, in *Genetics and the Origin of Species*, has summarized practically all existing knowledge on this subject. He gives an extensive bibliography.

Further knowledge of the mode of action and interaction of genes has been forthcoming from transplantation experiments on *Drosophila*. By temperature changes and local injuries, the mechanism of pattern formation on the wings of the flour moth, *Ephestia*, has been demonstrated. It has been shown that patches of embryonic skin of White Leghorn fowl develop colour if implanted on black or red hosts. Skin from embryos genetically black or red develop pigment when implanted on genetically white hosts. Infiltration of host cells into the transplant or intercellular diffusion of a chemical necessary to pigment formation and lacking in genetically white tissues are suggested as alternative explanations, with probability strongly favouring the latter. By transplantations of embryonic skin in mice it has been shown that the pigmentation pattern is predetermined before the hair follicles and their contained pigment granules are formed. These and numerous other studies on the time and mode of action of genes are providing the link between genetics in its narrowest sense as the mechanism of hereditary transmission and embryology, developmental anatomy, and morphology. It is in this intermediate field that knowledge is still most lacking.

The significance of genes modifying the expression of major mutations has been emphasized in various studies on *Drosophila*, on the Creeper Fowl, and in relation to mental defect in man. When a mutant gene has become established in a more or less inbred stock, modifiers are accumulated so that it comes to have less and fewer harmful effects. Transference of the gene to a stock not having an accumulation of modifiers restores the original effect, proving that the mutant gene is not itself changed. The practical significance of this principle in plant and animal breeding and in human heredity is obvious.

Progress in human genetics has been marked by the discovery of partial sex-linkage and the construction of a provisional map of the X-chromosome. In Britain, co-operation between the Medical Research Council Committee on Human Genetics and certain hospitals to the end that more extensive knowledge of the effects of cousin marriages may be obtained, has been established. It is known that certain rare diseases are more commonly found among the offspring of blood relations than in the general population, but very little information is yet available in the relation of intermarriage to the general health of the offspring. An American investigation on the inheritance of allergic disease (asthma, hay-fever) has indicated that it may depend upon the action of a single pair of genes. Individuals of the genotype HH are pure normals ; those of *hh* are pure for the allergic condition, and they develop allergic disease early in life ; individuals of genotype H*h* may never develop the disease, or may do so only after puberty—whether they do so or not they transmit it on the average to one-half of their offspring. A further study failed to reveal any evidence of genetic linkage between the genes determining allergic disease, the AB blood groups, the MN types, and eye colour.

Though the chromosome theory of heredity is now thoroughly established, there have recently been various criticisms of the gene concept. It has been stated (*see* Bibliography 3) that ' there are no genes, no gene mutations, and no wild-type allelomorphs ', though the same author states that the gene may have to be retained ' for teaching purposes ', and that while he considers the chromosome, not the gene, to be the unit of inheritance, ' a definite order within its texture is required for normal development '. For many years it has been evident that physical changes in the chromosomes, such as translocations, inversions, duplications, and deficiencies of their segments, as well as changes in chromosome number, may produce effects similar or identical to those formerly attributed to ' gene mutation '. Since the production of such changes by irradiation has become common, a fairly extensive series of ' position effects ' has been described. In a comprehensive review of the problem it has been stated :

' The age-old antinomy between the whole *versus* its parts [here] presents itself in a remarkably concise form. The hereditary material is discontinuous, for it is segregated into independent units, genes. And yet, it is a continuum of a higher order, since the independence of the units is incomplete—they are changed if their position in the system is altered. A chromosome is not merely a mechanical aggregation of genes, but a unit of a higher order, since another chromosome containing the same genes differently arranged may be a different chromosome. The properties of a chromosome are determined by those of the genes that are its structural units, and yet a chromosome is a harmonious system, which reflects the history of the organism, and is itself a determining factor of this history '. (*See* Bibliography 1 and 2.)

This view of the gene problem is more generally acceptable to the great majority of geneticists than the more extreme one quoted above.

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(C. L. Hu.)

GEOLOGY. One of the most important events marking the progress of geology in 1937 was the meeting of the International Geological Congress in Moscow. This gave unprecedented opportunities for geologists from all over the world to see, at first hand, some of the great amount of excellent geological work carried out recently in Soviet Russia. The programme included an exceedingly comprehensive list of excursions to such localities as the Kola Peninsula, the Ural Mountains, the Caucasus, Novaya Zemlya, and Siberia.

Turning to the various branches of geology, the following have been the most conspicuous lines of advance in recent years.

Physical Geology.—Our scanty knowledge of the ocean floor has been considerably increased by the work of such expeditions as the Snellius (Dutch) and the Murray (British). Improved methods of combining sounding with sampling, and the detection of gravitational anomalies have indicated a tectonic origin for the great ocean deeps, while important confirmation has been obtained of Darwin's subsidence theory for the formation of coral reefs. From the improved samples now obtained from the sea bottom new hypotheses have evolved for the origin of the great submarine canyons which cut into the continental shelf off some river mouths.

On land, the investigation of both valley glaciers, *e.g.* in Alaska and the Pamirs, and of the continental ice-sheets of Greenland and Antarctica, has shown marked progress, being greatly aided by the seismic methods of ice-sounding now employed, and also by the use of aerial photography.

Petrology.—Of all branches of geology petrology is in by far the most chaotic and undeveloped state, but it provides, therefore, the most scope for progress. The question of the classification of the igneous rocks presents a perennial problem which seems incapable of solution at present, although many ingenious schemes, mainly arithmetical in-

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basis, have recently been put forward. Unfortunately it cannot be said that the efforts of committees for the reform of petrographic nomenclature (on both sides of the Atlantic) have been conspicuously successful.

A great deal of work has lately been carried out by British geologists on the origin of certain granite masses, and has resulted in conflicting theories, all of which are of interest. Following on recent investigations in Britain and the northern Appalachian chain, the widespread distribution of ring-structure in plutonic complexes is receiving recognition.

An important line of attack applying to igneous, sedimentary, and metamorphic rocks alike is the microscopic technique devised by B. Sander (Austria), who correlates the internal optical structure of crystals with their history of deposition or metamorphism. Both this method and the system of directional field observations initiated by H. Cloos (Germany) have been employed with striking success in America.

A great amount of descriptive petrographical work continues to appear, and its quality shows constant improvement owing, largely, to the increasing use of the universal stage for the determination of the optical properties of minerals and to the employment of various ingenious instruments now available for estimating the volumetric proportions of minerals in thin sections with rapidity and moderate accuracy. Experimental work carried out in America on silicate systems has added greatly to our knowledge of the pyroxene and amphibole groups of minerals.

Historical Geology.—The progress of stratigraphy is steady though not startling. Among the most notable developments has been the conspicuous success of 'graded bedding' methods of solving some of the major stratigraphical problems of the Scottish Highlands.

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GEORGE VI (1895–), King of Great Britain and Ireland; second son of King George V; born at Sandringham, Dec. 14, 1895, was trained for the Royal Navy, with which he served in the World War, was created Duke of York in 1920, and on April 26, 1923, married Elizabeth (*q.v.*), daughter of the Earl of Strathmore. On the abdication of his elder brother, Edward VIII (*see* WINDSOR, DUKE OF), he succeeded to the throne on Dec. 11, 1936. On Dec. 14, His Majesty issued an Accession Message to Parliament, and on the 18th assumed supreme rank in the Army, Navy, and Air Force. On New Year's Day, 1937, King George sent a message of greeting to the Empire. On Feb. 9 the first levée of the reign was held at St. James's Palace, and on the 15th, King George went into residence at Buckingham Palace, after having two days previously been enthusiastically received in the East End of London when visiting the new People's Palace there. The early part of 1937 was largely taken up with preparations for the Coronation, which took place at Westminster Abbey on May 12, amid scenes of unexampled enthusiasm. These were repeated in London on the occasion of the royal drives through the streets on the following days. On the 20th, the King held a review of his Fleet at Spithead, and on May 24, with the Royal family, attended a thanksgiving service at St. Paul's Cathedral. He followed the royal custom of attending the Derby at the Epsom race-meeting at the beginning of June. From July 5 to 11 King George was in Scotland, holding two Courts at Edinburgh, and on the 14th and 15th visited Cardiff, Newport, Swansea, and other Welsh centres. A State visit to Belfast followed on July 28. But in spite of the press of State engagements, His Majesty found time, on Aug. 3, to spend a day at the Southwold annual holiday camp for public school boys and youths from the works and factories, which he himself had inaugurated when Duke of York, and which he had never failed to visit.

Peter North]

HIS MAJESTY KING GEORGE VI

From early August to early October, King George stayed at his Scottish seat of Balmoral, and on his return visited industrial Yorkshire on Oct. 20 and 21, returning to London to open Parliament in State for the first time on Oct. 26. Continuing the practice initiated by his father, the King issued a broadcast message to his people on Christmas Day, expressing his hope that peace and goodwill might speedily prevail in world affairs and in the lives of his subjects.

GEORGIA: *see* UNITED STATES OF AMERICA.

GEORGIAN S.S.R. A Soviet Republic in western Transcaucasia on the Black Sea, a member of the U.S.S.R. (*q.v.*), bordering N. and E. on the R.S.F.S.R., and S. on Turkey and the Transcaucasian Republics of Armenia and Azerbaijan. Georgia is known to the Russians as *Gruziya*. The capital is Tbilisi (formerly Tiflis); the national flag has a red ground with the name of the republic in gold in the top left square. Leading cities, with 1936 populations, are: Tbilisi, 445,100; Batumi, *c.* 100,000; Kutaisi, 72,300; and Poti, 21,000.

Area and Population.—Area: 70,000sq.km. Population (1936): 3,232,000 (Georgians 68 per cent., Armenians 11·6 per cent.). The chief languages spoken are Georgian, Armenian, Abkhazian, Ajarian, Osetian, and Russian. In 1936–37 there were 4,053 schools, with 658,000 scholars and 19,000 teachers; 19 higher educational institutions, with 20,000 students; 2,000 professors and lecturers; and 120 research institutes.

Planet News]

GEORGIAN S.S.R. THE TBILISI BRANCH OF THE MARX-ENGELS-LENIN INSTITUTE OF THE CENTRAL COMMITTEE OF THE COMMUNIST PARTY

History.—On Feb. 13, 1937, the Eighth Extraordinary Georgian Soviet Congress in Tbilisi adopted the new Constitution for Georgia. From now on, since the dissolution of the Federation of Transcaucasian Republics, the Georgian S.S.R. belongs directly to the U.S.S.R. as an equal, independent Union Republic, and includes the Abkhazian A.S.S.R., the Ajar A.S.S.R., the South Osetian Autonomous Province, 50 districts, and 2 separated towns—Tbilisi and Poti. 96·2 per cent. of the population took part in the elections to the Supreme Council of the U.S.S.R. on Dec. 12. A number of prominent Bolsheviks of the old guard and high State and local officials (including the premier of the republic, Magaloshvili, and his deputy) were shot in the summer of 1937 on charges of treason, terroristic conspiracy, and counter-revolutionary activities. In the Ajar A.S.S.R., also in Oct. 1937, the president and seven other officials were condemned to death for alleged plotting of an armed rising with a view to separating the republic from the Soviet Union.

Trade and Communications.—Sown area (1936): 3,789sq.m. In 1937, 76·5 per cent. peasant households were collectivized. The main agricultural activities are fruit and vine growing, silk culture, tea plantation (output, 1936, 20 million kgm.), tobacco plantation, grain production, and cattle breeding. Natural resources include oil, coal, manganese, timber, mineral springs (medicinal baths), and water power from rivers. The retail trade turnover (1936) was 1·9 milliard roubles, and the output of industry (1936—at prices 1926–27) was 798 million roubles. The length of railway lines (1936) was 927km., including the electrified line from Tbilisi to Dzhugeli (183km.). There are several mountain motor roads. (S. Yak.)

GERMAN LITERATURE. In the realm of literature, as in everything else, National Socialism has sought to organize, control, and direct. All writers in Germany must belong to a branch of the Reich Culture Chamber, of which Dr. Goebbels (*q.v.*) is the head. Prizes and distinctions are given to those whom he deems worthy. Addressing German booksellers in the spring of 1937, he declared that the days were over when the possession of books was the exclusive privilege of the wealthy and intellectual classes. Therefore 760 new circulating libraries were established in smaller towns. The size of books was cut down, and their average price reduced between 1932 and 1936 from 5·08 to 3·97 marks; *i.e.* from about 9*s.* to about 6*s.* The number of book titles rose from a low point of 20,852 in 1934 to 23,654 in 1936, and probably reached 25,000 in 1937. The average number of copies printed per title is stated by Dr. Goebbels to have risen from 5,000 in 1935 to 6,200 in 1936. It is perhaps significant that new titles increased only 0·1 per cent. from 1935 to 1936, while new editions of old works, which formed about one-fifth of the total book production, increased 10·2 per cent.

The most important change in the character of German literature, from the Nazi point of view, has been the suppression to a considerable extent of works by Jewish and liberal writers, many of whom have left Germany. There has been a decline in works on natural science, philosophy, and religion, and an increase in political and military works and in historical novels, especially those dealing with German peasants and regional life.

Among the novelists, Hans Friedrich Blunck's story of the King of the Vandals, *König Geiserich* (1936), is interesting, based on a careful study of the documents, and not obtrusively propagandist. Hans Carossa, author of *Geheimnisse des Reifen Lebens* (1936), is a Bavarian doctor who gives his novels of South German village life the form of a journal in which the plot is delightfully interspersed with allegory and philosophical diversions.

The tendency towards regionalism is seen in Jakob Kneip. His *Porta Nigra* (1932) was the account of a young man who gave up the priesthood in order to volunteer in the World War. In his *Feuer vom Himmel* (1936), the same young man returns to his home to find ruin and despair, which he helps to overcome. Another novelist of the War is Edwin Erich Dwinger. He was born in Kiel of a German father and Russian mother, captured during the War, and imprisoned in Siberia. His half-Russian origin and early acquaintance with Bolshevism gives the psychological and factual background for an intensely patriotic trilogy, in which he describes life behind barbed wire (*Die Armee hinter Stacheldraht*), the conflict between the Kolchak Whites and the Trotskyist Reds (*Zwischen Weiss und Rot*), and his return home (*Wir rufen Deutschland*).

Nazi dramatists have been less successful than the novelists. *Schlageter* (1933), by Hanns Johst, is the dramatic account of a German, lauded as a hero, who was shot by the French during their occupation of the Ruhr. Though this and other pieces like Ernst Wiechert's *Der Verlorene Sohn* (1935) and F. Loder's *Konjunktur* (1934) have been often played, the theatre-going public appears to prefer Shakespeare and the German classics.

A notable and excellent historical work is that of the Karlsruhe schoolmaster, Franz Schnabel, *Deutsche Geschichte im 19. Jahrhundert* (4 vols., 1929–37); this history of Germany in the nineteenth century, written from the Liberal South German and Roman Catholic point of view, is an invaluable counterpart to Treitschke's older Protestant Prussian work of the same title. (S. B. F.)

Other outstanding historical works are Frank Thiess's *Tsushima, der Roman eines Seekrieges* (Vienna), Kurt Jagow's interesting collection of Queen Victoria's letters (Berlin), and Heinrich Stein's book on *Tilman Riemenschneider im deutschen Bauernkrieg* (Vienna).

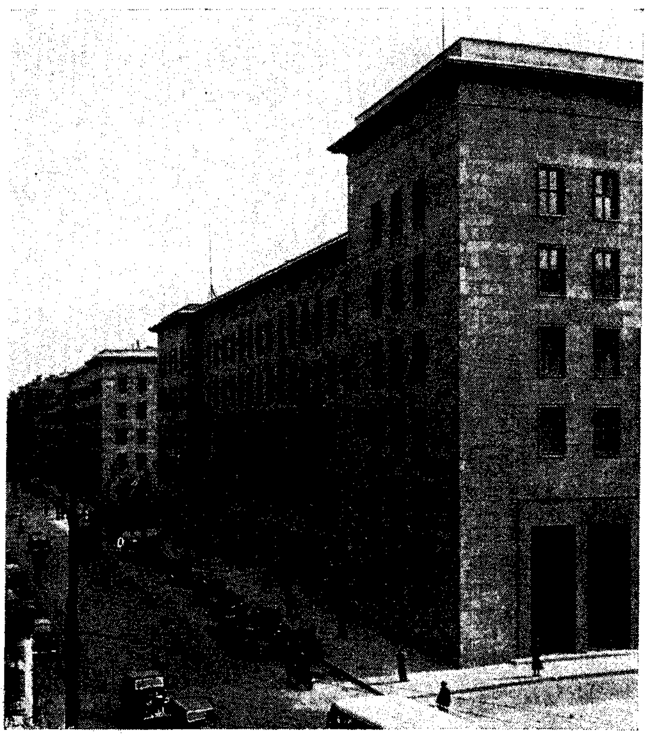
In the field of poetry the old idyllic school is still represented by Hermann Hesse, whose collections of elegiac verse, *Stunden im Garten* and *Neue Gedichte* are accompanied by small volumes of stories and reminiscences such as *Tragisch* and *Gedankenblätter*. Two younger poets, Oskar Loerke and Josef Weinheber, have added to their already considerable production, the former in his pessimistically sensitive *Der Wald der Welt*, which makes a striking contrast to Weinheber's *Späte Krone* with its energetic affirmation of life and its aristocratic cult of classical form.

One of the most interesting of recent publications is the posthumous edition of the works of the Prague Jew, Franz Kafka. His manuscripts were handed to his friend Max Brod with the injunction to destroy them ; but Brod fortunately decided to publish them instead, and an edition of the tales and novels of this visionary mystic is now coming out. Kafka has the style of E. T. A. Hoffmann, but a far subtler brain and keener powers of observation, and his works move in an atmosphere of dreams, with all their vagueness and yet their intense but pointless sense of reality. Max Brod, with his novel *Annerl* and his *Novellen aus Böhmen*, is one of the outstanding emigrant authors whose production has not been checked by exile. The foremost among them, Thomas Mann, has continued his magnum opus, *Joseph und seine Brüder* (Vienna), an up-to-date edition of Stefan Zweig's works has appeared in two volumes, and other novelists, like Bernhard von Brentano and Wilhelm Speyer, have concentrated on an objective presentation of the problems which face the emigrants from the authoritarian States. From their exile outside Germany, valuable contributions to her literature continue to be made by Heinrich Mann, Bruno Frank, Lion Feuchtwanger, Theodor Wolff, and many others. (P. F. D. T.)

GERMANY (*Deutsches Reich*; Fr. *Allemagne*), a central European State, bounded N. by the Baltic and North Seas and Denmark ; E. by Lithuania, Poland, and Czechoslovakia ; S. by Austria and Switzerland ; W. by France, Belgium, and the Netherlands. Since 1919, East Prussia (*q.v.*) has been separated from the main territory of Germany by the Polish ' Corridor '. Capital, Berlin ; Reich Chancellor and Leader (Führer), Adolf Hitler (*q.v.*). The national flag has a black swastika in a white circle on a red ground.

Area and Population.—Area, 181,742sq.m. Population, June 16, 1933, 66,029,000 ; est., Jan. 1, 1938 67,300,000. There were (1933) 104 cities with a population of more than 50,000 each, and 567 cities and towns with more than 10,000 each. Cities with more than 500,000 on Jan. 1, 1937, were : Berlin, 4,251,000 ; Hamburg, 1,097,000 ; Cologne, 762,000 ; Munich, 756,000 ; Leipzig, 698,000 ; Essen, 662,000 ; Dresden, 637,000 ; Breslau, 625,000 ; Frankfurt-am-Main, 551,000 ; Dortmund, 540,000 ; Düsseldorf, 515,000. In place of the former German States, the country is divided into the following *Länder* : Prussia, Bavaria, Saxony, Württemberg, Baden, Hamburg, Thuringia, Hesse, Mecklenburg, Brunswick, Oldenburg, Bremen, Anhalt, Lippe, Schaumburg-Lippe, Saarland. The former State of Lübeck is now incorporated in Prussia.

History.—In Jan. 1937 the German government took action to discontinue certain of the ' discriminations ' remaining from the peace settlement of 1919. On Jan. 6 passage through the Kiel canal (*q.v.*) was curtailed ; on Jan. 30, Herr Hitler announced that the German railway system (*Reichsbahn*) and the Central Bank (*Reichsbank*) would be removed from international control, and he also formally withdrew Germany's signature from ' the declaration, extracted by force from a weak Germany, that Germany was responsible for the War '. At the same time there was a considerable intensification of the campaign for the return of the former German colonies. In his speech before the Reichstag on the fourth anniversary of the assumption of power by the National-Socialists (Jan. 30), Herr Hitler declared that ' the demand for colonies will ever and again be raised from our so densely populated country as a matter of course '. On March 1 Herr von Ribbentrop, German ambassador in London, made a vigorous demand for the return of the colonies in a speech delivered at the opening of the Leipzig Fair ; whilst General Göring declared, on Nov. 26 : ' We will succeed (in recovering the colonies), not through the goodwill of others, but through our own strength '.



German State Rys.]

BERLIN : A CORNER OF THE VAST AIR MINISTRY NEWLY BUILT

The opening of 1937 found the German government in conflict with the Basque government over the seizure by the Basque naval authorities of the German merchant vessel ' Pluto '. The commander of the cruiser ' Königsberg ', acting under instructions to take reprisals, seized two Spanish government merchantmen. On May 29 a further, and more serious, incident occurred, when Spanish government aircraft bombed the German ' pocket ' battleship ' Deutschland ', which was participating in the international naval control, and was lying at anchor at Iviza (Balearic Isles) when the attack took place. The attack, which caused 31 deaths, again called forth reprisals, the German government ordering its warships to bombard the Spanish government seaport of Almeria.

In the circumstances the German government decided to withdraw from participation in the naval control system and in the work of the Non-Intervention Committee pending the negotiation of arrangements for united action by Great Britain, France, Germany, and Italy in the event of further attacks on patrol vessels. By June 15 an arrangement for consultation between the commanding officers of the four naval squadrons had been arrived at, and Germany declared herself ready to resume her patrol duties. Only four days later a German official communiqué alleged that two submarine attacks had been made upon the German cruiser ' Leipzig ' by a Spanish government submarine. Germany, supported by Italy, thereupon demanded that the four naval squadrons should show their solidarity by a joint naval demonstration off Valencia ; Britain and France made such a demonstration conditional on the holding of an inquiry into the responsibility for the attack, whereupon Germany and Italy withdrew a second time from the control system. Meanwhile, the controversy arising out of the destruction of Guernica caused violent criticism of Germany in the foreign press and of the foreign press in Germany.

Throughout the year 1937, Germany collaborated closely with Italy in matters of foreign policy. Having recognized the administration of General Franco as the legitimate government of ' Nationalist Spain ', both countries pressed for the granting of belligerent rights to the parties in the civil war ; detachments of the German Air Force collaborated with Italian infantry in the advance against Bilbao. The press of the two countries adopted throughout the year an identical attitude, and Signor Mussolini lent personal support to the colonial claims advanced by Germany. In September, the solidarity of the ' Rome-Berlin axis ' was given spectacular expression during the four days' visit paid to Munich and Berlin by the Duce. On Dec. 12, Italy having announced her withdrawal from the League of Nations, the German official news agency declared that ' A return of Germany to the League will never again come in question '.

Germany's attitude to the Far Eastern conflict was governed by the fact that, whilst she was bound to Japan by the terms of the anti-Comintern Pact, she also had considerable material interests in China ; German officers had trained the Chinese army, and German trade with China had increased by approximately 100 per cent. since the previous year. Germany therefore observed a policy of strict neutrality, and declined to be represented at the Nine-Power Conference on Far Eastern Affairs at Brussels.

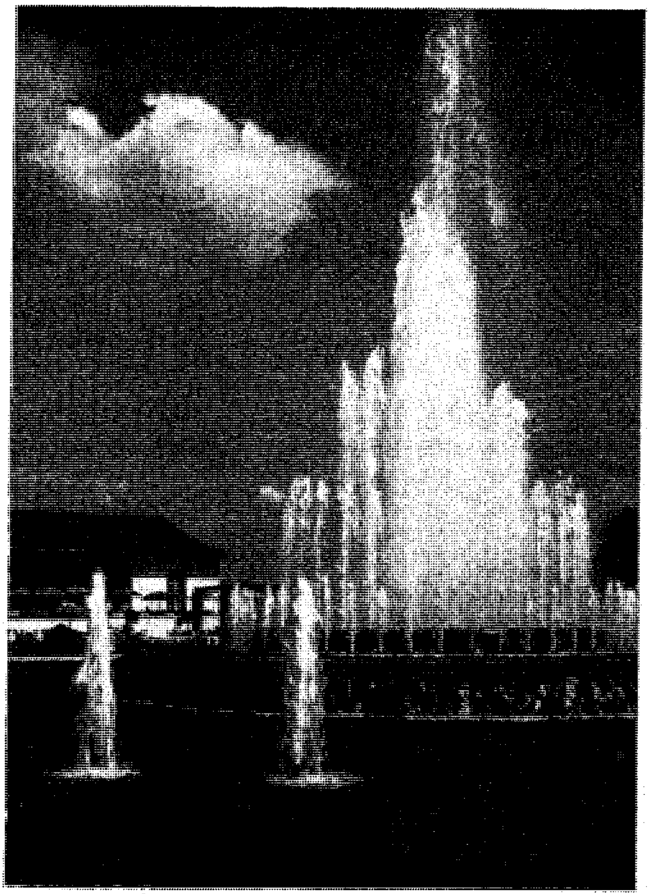
In pursuance of her policy of concluding bilateral agreements with her neighbours, Germany, on Oct. 13, guaranteed by an exchange of notes the inviolability and integrity of Belgium and agreed to come to her assistance if attacked. The guarantee was conditional upon the territory of Belgium not being used as a base for an attack upon Germany, and Belgium, for her part, placed on record her determination to prevent the use of her territory as a base of operations by an attacking Power. It was further reported that Herr Hitler had received a high official of the Swiss Federal government, and had made to him a declaration pledging Germany to respect Swiss neutrality. On Nov. 5, after difficulties had arisen between Germany and Poland concerning their respective minorities, an agreement was concluded regulating the position ; moreover, at a time when the tone of the press suggested that relations between the Reich and Czechoslovakia were more than usually strained, an agreement was concluded between them regulating the position on the Eger frontier.

During the year Germany became involved in a number of controversies with foreign Powers, each of which was accompanied by a vehement press campaign : with the South African government over the measures it found itself obliged to take in order to deal with the problem of Nazi activities in South-West Africa ; with the United States government over a speech delivered by Mr. La Guardia, mayor of New York City, and the strong press campaign against the United States which his utterances called forth in Germany; with Czechoslovakia over the alleged building of aerodromes for the use of the Soviet Air Force.

Relations with Great Britain fluctuated considerably during the course of 1937. An appeal for a better understanding between the two countries, delivered by Sir Nevile Henderson, the newly arrived British ambassador in Berlin, was well received, and on June 15 it was announced that Baron von Neurath, the German foreign secretary, would visit London. In view of the ' Leipzig ' incident, however, the German government felt obliged to ' postpone ' the visit. The expulsion of three German journalists (August 6) by the Home Office, and the retaliatory action promptly taken by the German government against the senior correspondent of *The Times* provoked considerable controversy. Behind such outbursts of feeling the general divergence of policy between the German and British governments was apparent. Germany declined to take part in the work of the League of Nations Committee which studied the question of access to raw materials ; the German press protested against alleged attempts by France and Britain to ' make political capital out of our supposed financial and economic straits '. However, on Nov. 18, Lord Halifax, Lord President of the Council, availed himself of an opportunity afforded by an invitation to the Berlin Hunting Exhibition to visit Herr Hitler at Berchtesgaden, and he also had discussions with other prominent German leaders.

An excellent impression was created when M. Delbos, French Foreign Minister, was greeted at the Schlesischerbahnhof in Berlin by Baron von Neurath when on his way to Warsaw (Dec. 5).

The Reich cabinet comprised, at the end of 1937, the following ministers with their respective departments : Baron von Neurath (Foreign Affairs) ; Wilhelm Frick (Interior) ; Paul Joseph Goebbels (Propaganda and Enlightenment) ; Schwerin von Krosigk (Finance) ; Walther



German State Rys.]

DÜSSELDORF EXHIBITION 1937. THE FOUNTAIN IN FRONT OF THE MAIN RESTAURANT

Funk (Economics) ; Franz Seldte (Labour) ; Franz Gürtner (Justice) ; Werner von Blomberg (War) ; Hermann Göring (Aviation) ; Walter Darre (Agriculture) ; Bernhard Rust (Education) ; Hanns Kerrl (Church Affairs) ; Wilhelm Chuesorge (Post Office) ; Julius Dorpmuller (Transportation) ; and four ministers without portfolio—Rudolf Hess, Hjalmar Schacht, Hans Frank, and Heinrich Lammers.

Throughout the autumn there were persistent rumours of the impending resignation of Dr. Schacht from the position of acting minister of economics. On Nov. 26 these rumours were confirmed by an official announcement that the Führer had accepted Dr. Schacht's resignation. Dr. Schacht, who remained President of the Reichsbank, was appointed Reich Minister, and was succeeded at the Ministry of Economics by Herr Funk.

Trade and Communications.—In a speech delivered on Dec. 31, 1936, Herr Hitler defined the tasks which Germany must set herself in the economic field during the year 1937, in pursuance of her goal of self-sufficiency. The four-year plan, Herr Hitler declared in his speech of Jan. 30, 1937, was designed to furnish employment for men thrown out of work as the rearmament programme slowed down. During 1937 it became increasingly plain that the government was determined to increase State participation in industry if private industry proved unable to carry through the tasks which it was called upon to perform. Referring to the task of making the motor industry independent of imported materials, Herr Hitler declared, on Feb. 20 : 'Either the so-called free economy is capable of solving this problem or it is incapable of continuing to exist as a private enterprise any longer'. It subsequently became known that, since no private firm had shown itself ready to undertake the production of the 'People's Car' (*Volksauto*), the 'Labour Front' was considering plans for setting up factories for the purpose. A most important step in the direction of State Socialism was the establishment of the 'Hermann Göring' steel works, a State enterprise set up for the smelting of low-grade iron-ore. In the sphere of agriculture, a decree of July 5 provided for compulsory deliveries of grain at fixed prices.

The continued expansion was most marked in the production of capital goods. Taking 1928 at 100, production, which stood at 61·5 in 1933, had reached 119·1 by July 1937. The figure for retail trade, which stood at 60 in 1933 (1928 = 100), rose to a little over 80 in July 1937 (*Financial News*, Nov. 30, 1937).

Since 1935 Germany's exports and imports have been very strictly controlled, first by Dr. Schacht's 'new system', and then by Göring's dictatorial economic power as commissioner for the four-year plan. The fact that there was a favourable balance of 550 million marks (about £44 millions) for 1936 does not mean that Germany acquired that amount of gold or foreign exchange, because about half of the trade was conducted through 'clearing agreements', and a considerable part of the surplus of exports over imports had to be used to pay for goods bought or money borrowed in earlier years.

The estimated value of Germany's trade during 1937 was, in millions of marks: imports 5,432, exports 5,814 ; an increase of 1,214 and 1,046 respectively over the 1936 figures. Germany found difficulty in furnishing exports in sufficient quantities to balance imports from certain countries. On March 12, Yugoslavia was compelled to cut her exports to the Reich by 50 per cent., and on Nov. 13 Austria followed the same course. From time to time shortages of certain foodstuffs occurred, and on Jan. 13, the government issued an order that no wheat or rye should be used as fodder for livestock. On March 11, the decrees enforcing food-rationing were tightened up. On March 23 General Göring claimed that imports of foodstuffs had been reduced to 17 per cent. of the nation's requirements.

The German State Railway (*Reichsbahn*) included, in 1935, 33,076m. of standard-gauge lines and 546m. of narrow-gauge lines. Privately owned lines were 2,313m. of standard and 476m. of narrow gauge. Inland shipping in 1937 included 5,375 vessels moving under their own power and totalling 528,000 tons ; and 12,488 canal boats and other vessels without power, totalling 5,835,000 tons. High-seas shipping included 3,579 vessels with a total registered net tonnage of 2,238,000. By the end of 1937 Germany had completed the construction of 1,243m. of the new motor highway network (*Reichsautobahn*). This completes about a third of the highways projected. They are magnificent cement two-way roads separated by a grass strip, and without any crossings ; intersecting roads use bridges or underpasses. The highways have regard for scenic beauty, and are of great economic and strategic importance. They have cost nearly 2,000 million marks (nearly £160 millions), and have given employment to 250,000 workers, half directly and half indirectly. Between 1933 and 1936 motor-cycles increased from 57,840 to 175,898 ; passenger cars from 82,048 to 213,580 ; motor lorries from 11,573 to 56,941 ; and motor buses 354 to 2,117.

The Post Office statistics for the year ending March 31, 1937, with the per cent. of increase since 1932 in parentheses, are : letters carried, over 6,000 million (29) ; postal orders, 141,000 millions (37) ; telephones, 3,831,100 (16) ; telegrams, 21 millions ; radio receiving sets, 8,511,959. Receipts were 1,886 million marks ; expenditure 1,963 millions.

Agriculture, Manufactures, and Mining.—Germany's grain harvests were medium or poor in 1936 and 1937, causing some food and fodder shortage. This was partly offset by the 1937 potato crop, which was the best ever recorded. The 1936 figures for the principal crops in thousands of metric tons (excluding Saar Territory) are : rye, 7,386 ; wheat, 4,426 ; barley, 3,399 ; oats, 5,618 ; potatoes, 46,323 ; sugar-beets, 12,095 ; fodder-beets, 37,826.

Germany's principal mineral and manufactured products in 1936 were as follows in metric tons : coal, 159,756,600 ; lignite, 161,426,900 ; iron-ore, 2,601,100 ; lead, 101,000 ; zinc, 207,700 ; rock-salt, 2,383,800 ; potash, 11,764,600 ; pig-iron, 13,302,500 ; steel, 18,590,900.

Economic Nationalization and Synthetic Products.—Developments in Germany's policy of economic nationalization or self-sufficiency have been increasingly directed towards remedying her deficiencies of raw materials by the chemical manufacture of synthetic products, such as fatty acids, fertilizers, oil fuels, precious stones, rubber, wool, etc., from her own natural resources.

Buna, or synthetic rubber, which was awarded the Grand Prix at the Paris Exhibition for 1937, is one of the most successful of recent achievements. The primary materials are lime and coal, and it is now produced in four distinct types, each with specific properties adapted to different requirements. Zellwolle, or synthetic wool, which is a development from the original Vistra-fibre of 1920, reached a new high level of production, at 75,000 tons for 1937, and in the I. G. Farbenindustries factory at Wolfen, German beechwood is now used as the basic material, instead of the imported pinewood previously employed. The production of fatty acids for the use of the soap industry from paraffin obtained as a by-product in the lique-

German State Rys.]

LUDWIGSHAVEN—A NEW HOUSING PROJECT.

faction of coal, has advanced. Close co-operation between chemical research in the German synthetic nitrogren industry and agricultural practice has also brought about a noticeable improvement in the properties of fertilizers, and has resulted in the discovery of new varieties, including some mixed types produced by the I. G. Farbenindustries, which contain, not only calcium cyanamide, but in addition phosphates and sometimes potassium salts, thus giving a wider range of fertilizing value. The result has been to make Germany independent of foreign nitrates. The production from corundum and spinels of artificial precious stones such as rubies, sapphires, and aquamarines, which closely resemble their natural prototypes in chemical and physical properties, is a growing synthetic industry. These stones are now used in watches and mechanical instruments, as well as for jewellery. Finally, further developments are proceeding in the replacement of petroleum and its products by synthetic oils and lubricants obtained by the catalytic hydrogenation of coals or hydrocarbons under pressure.

Banking and Finance.—No exact statement can be made in regard to the German government's revenues and expenditures, as the budget has not been published since 1934. The taxes by the central government have more than doubled since Hitler came to power, being about 6,000 million marks for 1932–33, 11,500 millions for the fiscal year ending March 31, 1937, and estimated at more than 14,000 millions for the year ending March 31, 1938. This does not include taxes of about 4,000 million marks levied by the lands and local communities (*Gemeinde*). The exact debt is also unknown, because the large amounts of treasury bills issued to build armaments, motor highways, and other public works, and to provide for the unemployed, are not counted in the debt until they fall due. Between 1935 and Jan. 1938, the government publicly increased the Reich debt by issuing eight long-term loans totalling 5,248 million marks, in order to take care of the treasury bills as they fell due and to consolidate the short-term indebtedness. These loans all bore 4½ per cent. interest, were issued at 98¾, and were quoted, in Jan. 1938, at a fraction above the issued price. They do not include a 500 million-mark loan issued by the State railway (*Reichsbahn*) in 1936, nor loans by other government enterprises. The total debt of the Reich in Jan. 1938 was conservatively estimated at more than 50,000 million marks.

The Reichsbank's gold and foreign exchange reserves, which were about 4,000 million marks in 1932, had shrunk to 75 millions at the end of 1937 and afforded only a 1·6 per cent. coverage for paper money, as compared with 24·7 per cent. in 1932, and with the 40 per cent. which, before the World War, was considered the lowest coverage compatible with safety. The standard of currency is the German mark, equivalent to about 1*s.* 7*d.*

Education.—Education has gone through a drastic reorganization under Nazi rule. The period of school attendance was shortened by one year in 1937. Many new schools have been established for giving a year or two of professional or technical training; for many students this will replace the last years at the regular schools or at universities and the older technical institutes. Many schools have also been established for training 'leaders' for the Nazi Party and for government positions; emphasis in them is placed on comradeship, sports, Nazi ideology, and leadership.

Attendance at Germany's 24 universities has been considerably cut down since the Nazi revolution, partly owing to government restrictions upon attendance, partly owing to a reputed decline in the quality of teaching which followed the close association of professional appointments with political affiliations, and partly owing to other causes. The government tends to shift students from the large city universities to the smaller town universities, especially those in eastern Germany, where Nazi influence is stronger.

The conflict between the National-Socialist party State on the one hand and the Roman Catholic and 'Confessional' churches on the other continued unabated, and, perhaps, with increased bitterness, throughout the year. Very serious charges were brought against State and Party by the leaders of the churches. Cardinal Fulhaber, Cardinal-Archbishop of Munich, declared at the beginning of the year that he had read with horror in a publication of the 'German Youth Movement' that 'the Cross must fall if Germany is to live'. On Jan. 3, the entire Roman Catholic Episcopate of Germany demanded, in a pastoral letter, that 'the youth of the nation be no longer told that, after overwhelming Bolshevism, State Enemy No. 1, it will be the turn of the Catholic Church, State Enemy No. 2'. A number of measures were taken with a view to bringing education more directly under the influence of the State; thus in June an order came into effect whereby all church schools in Bavaria were secularized. In January it had become known that Herr Rust, minister of education, had left the church. On March 21, Bishop Garf von Preysing, Catholic bishop of Berlin, read from the pulpit a papal encyclical denouncing breaches of the Concordat. The following day the *Völkischer Beobachter* declared in an article that: 'Even a treaty with the Holy See has nothing sacrosanct, inviolable, and eternal in itself. It must adapt itself to living development if it is not to lose its force'. Throughout the year arrests of Protestant pastors continued, and, on July 1, Pastor Niemöller, the most prominent champion of the Confessional Movement, was himself arrested. On Feb. 15, Herr Hitler ordered 'Free elections to a church synod'. On Nov. 23, however, the minister for church affairs, Herr Kerrl, announced that the holding of elections had been 'indefinitely postponed'.

Army and Navy.—On March 16, 1935, Hitler suddenly brushed aside all the limitations imposed by the Versailles Treaty, and announced that Germany would have an army based on the pre-War principle of universal military service. The term of service was at first fixed at one year, but in Aug. 1936, was extended to two years, giving Germany an army of something over 700,000 men. It is equipped with all types of the most modern weapons. The military air force, built up by Göring, was estimated at the end of 1937 to include 2,500 military planes and 12,000 trained pilots.

The limitation of the German navy to six 10,000-ton battleships and certain smaller craft was also repudiated by Hitler in June 1935, and replaced by an Anglo-German Naval Agreement merely limiting the German fleet by 35 per cent. (45 per cent. for submarines) of the British. Germany's naval tonnage at the end of 1937 was stated by *Weyer's Naval Handbook* to be 134,339 tons, and her building programme to provide for bringing this tonnage up to 438,467 tons, by the construction of two 35,000-ton and two 26,000-ton battleships, two 19,250-ton aeroplane carriers, five 10,000-ton cruisers, and a considerable number of smaller vessels, including 25 submarines. (*See* also ARMIES OF THE WORLD; NAVIES OF THE WORLD.)

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GERSHWIN, GEORGE, American musical composer; born in Brooklyn, N.Y., Sept. 26, 1898; died in Hollywood, July 11, 1937. A short biography appears in the *Ency. Brit.*, vol. 10, p. 314. Among his more recent works were *An American in Paris*, a piece for symphony orchestras (1928); *Second Rhapsody* (1931); *Of Thee I Sing*, which won the Pulitzer Prize (1931); *Let 'Em Eat Cake* (1933); and the opera, *Porgy and Bess* (1935).

GIBRALTAR, a rocky headland connected by an isthmus with the Spanish mainland almost at its southern extremity, commanding the inlet to the Mediterranean, and less than 15m. from Africa; since 1704 a British possession and Crown Colony; area, 1,200 acres; pop. (census 1931), 21,372, including 17,613 civilians; est. 1936 (civil only), 15,900, mostly, so far as concerns the civilians, of Spanish descent. The non-military population are mostly Roman Catholic, and both the Catholic and the Anglican churches received a small government subsidy. Elementary education, which is compulsory, is carried on in 13 schools, 11 of them Catholic; the average attendance in 1935–36 was 2,347. There are also four secondary schools.

The governor and commander-in-chief, His Excellency General Sir Charles Harington, G.C.B., G.B.E., D.S.O., is assisted by a small executive council, including three unofficial members.

The civil war in Spain having caused a number of refugees and others to settle in Gibraltar, the government in May 1937 called attention to the consequent overcrowding and the danger of an epidemic, and offered to arrange for the transport to a Spanish port of such Spaniards as feared that their lives would be in peril if they re-crossed the frontier. It was announced that, if advantage were not taken of this offer, permits of residence would be reviewed and reduced in number. Later in the year questions were asked in the British Parliament relative to an allegation that Gen. Franco had, with the help of German experts, placed guns on the part of Spanish territory occupied by him which commanded the fortifications of Gibraltar; but the government denied the allegation, and the matter dropped.

The revenue of the colony in 1936 was £211,500 and its expenditure £180,000; the revenue is mainly from customs, Crown rents, fees, and port dues. The trade is mainly transit trade, and industries are all but non-existent. Banking is carried on by five private establishments. About 11 million tons of shipping enter the port yearly, and tourist traffic is rapidly increasing. There is a large Admiralty harbour, and it is as a naval and military station that Gibraltar is of fundamental importance to the British Empire. About 2,700 British troops are stationed on the Rock.

British currency is in use; the local government issues its own currency notes. Spanish money, however, is also in circulation.

GILLETTE, WILLIAM HOOKER, American actor and playwright; born at Hartford, Conn., July 24, 1855; died at Hartford, April 29, 1937. An account of his career may be found in the *Ency. Brit.*, vol. 10, p. 354.

GIRL GUIDES. Quite early in 1937 Her Majesty the Queen, who before her marriage and as Duchess of York was a commissioner of the Girl Guides in Scotland, became patroness of the Girl Guides Association.

During April, parties of Guides from the Dominions and Colonies started arriving in England for the Coronation, and headquarters had to work at full pressure arranging for their accommodation and entertainment. On May 7 they became the guests of Imperial headquarters at the coronation camp at Chigwell, whence they were able to travel to London and watch the procession from places allotted to them on the Victoria Memorial. Before May was over, a special service was held at Westminster for Scouts and Guides. Four thousand attended and, led by the Chief Scout, Lord Baden-Powell, renewed their promise.

London held a monster rally in Wembley Stadium in June, where 16,000 performers took part, and an audience of 60,000 from all parts of the British Isles watched displays given by Guides of all ages taken from the London area. The Princess Royal attended the rally and took the salute at the march past.

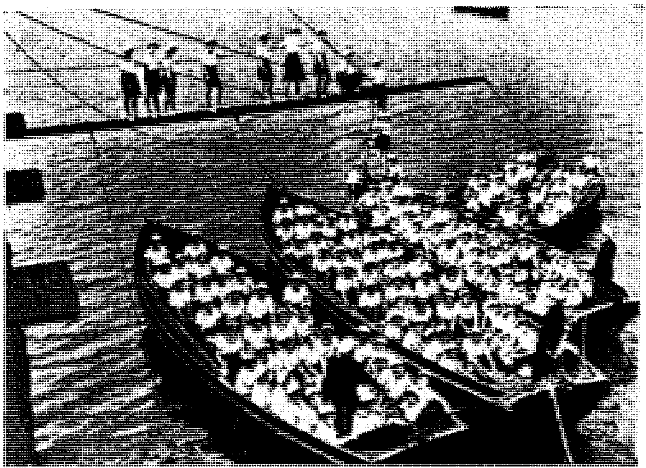
In August some 300 Sea Rangers held their training week in H.M.S. *Implacable* and H.M.S. *Foudroyant* at Portsmouth.

The twenty-fifth wedding anniversary of the Chief Guide and Chief Scout took place on Oct. 30. A dinner was held to celebrate the occasion, at which Her Royal Highness the Princess Royal took the chair, and made a present of plate to the Chiefs from Guides and Scouts throughout the world.

In addition to becoming patroness, during the autumn Her Majesty the Queen further showed her approval of the Association by allowing the formation of the 1st Buckingham Palace Guide Company and Brownie Pack, and in December Their Royal Highnesses the Princesses Elizabeth and Margaret were enrolled as a Guide and Brownie respectively. (N. M.)

GLANDS AND HORMONES: *see* ENDOCRINOLOGY.

GLASGOW, the largest city in Scotland and second largest in Great Britain, disputes with Sydney the title of third largest city of the British Commonwealth. Covering an area of 30,040 acres, it had at the 1931 census a population of 1,088,524, estimated to have increased to 1,124,300 in 1936. The city is situated on the river Clyde, one of the world's greatest commercial highways; in 1936–37 the port was entered by 7,582,000 tons of shipping, and



Sport and General]

GIRLS OF THE SEA RANGER BRANCH OF THE GIRL GUIDES ASSOCIATION, ON THE TRAINING SHIP 'IMPLACABLE' AT PORTSMOUTH

7,550,000 tons were cleared. At the end of December, a board of inquiry into the supply and regulation of casual labour about the Glasgow docks issued its report, recommending various measures to check abuses that had arisen regarding claims for unemployment pay.

The city is a great shipbuilding centre, and manufactures iron and steel goods, chemicals, textiles, and tobacco. Its university on Oct. 23 achieved the distinction of electing the first pacifist Lord Rector of any British university, Canon H. R. L. Sheppard (*q.v.*), who defeated Scottish Nationalist, Unionist, and 'United Front' candidates, including Mr. Winston Churchill, but died a few days after his election. On July 9, Glasgow received a visit from the King and Queen, the first since their accession. A strike of shipyard apprentices on Clydeside in March and April lasted five weeks, and on April 16 a sympathetic one-day strike took place which involved 100,000 workers. A strike of 1,500 men also occurred in an armament works at Parkhead, lasting seven weeks.

The main interest of Glasgow in 1937, however, concerned the Empire Exhibition which is to be held at Bellahouston Park, opening in May 1938. Work began in February, about 10,000 men being employed in the preparation of the necessary buildings, which are to include an observation tower 300ft. in height; the total cost of the exhibition is expected to reach £10 millions. The site was inspected by King George at his visit in July. Considerable discussion took place on the question of the supply of alcoholic refreshments at the exhibition, which is being held in a 'dry' area; but the promoters succeeded, despite loud-voiced opposition in Parliament and elsewhere, in obtaining an Order setting aside, for the period of the exhibition and within its grounds, the prohibition of the sale of liquor.

At the end of August, Glasgow claimed to be the first city in Great Britain to complete its air raids precaution schemes, the total cost of which was estimated at £800,000.

GLASS. Outstanding developments in glass manufacturing in 1937 have been: cooking utensils of toughened glass for use over flames; improved glass wool and fibre, and fabrication of glass ropes, yarns, and fabrics for many purposes; cellular glass (in Europe), formed by generating bubbles in masses of glass to produce light building material of high insulating value. The practice of lettering and labelling bottles with fired-on coloured enamels increased in popularity.

Production, in both Great Britain and in America, showed a marked increase over 1935, the last year whose census figures are available. The British glass industry in 1935 used 530,000 tons of sand, employed 45,000 persons, and made ware valued at £17 millions. The American glass industry used 2,300,000 tons of sand, employed 67,000 persons, and the value of ware made was £56,800,000. In both countries, bottles and jars make up about one-third the production value, with plate glass in second position. The comparatively lower number of employees and lower price per unit weight in American production are explained by more mechanization.

Technologists were interested in the twenty-first anniversary of the Society of Glass Technology, whose journal, edited by Prof. W. E. S. Turner of Sheffield, is the most important record in English of glass research. Investigations in 1937 were largely directed at the elusive problem of constitution of glass. Co-ordinated efforts, arranged internationally through the Congress on Glass, were planned to determine values for the physical properties of glass as an engineering material.

GLEICHEN, LORD EDWARD, British major-general; born in London, Jan. 15, 1863; died in London, Dec. 14, 1937. For a biographical note, *see Ency. Brit.*, vol. 10, p. 425. He retired from the army in Oct. 1919. His honours included the D.S.O. (1900), C.M.G. (1898), C.B. (1906), and K.C.V.O. (1909). In 1910 he married the Hon. Sylvia Gay Edwardes.

GLENRAVEL, ARTHUR SHIRLEY BENN, 1st Baron, of Kensington, K.B.E., British politician; born Dec. 20, 1858; died in London, June 13, 1937. Early in his career he was resident in Canada and the U.S.A., and became managing director of Messrs. Hunter, Benn & Co. He was Conservative M.P., 1910–18, for Plymouth, and, 1918–29, for the Drake Division of Plymouth, and, 1931–35, for the Park Division of Sheffield. He was created a K.B.E. in 1918, a baronet in 1926, and a baron in 1936. From its establishment, in 1920, until 1927 he was a director of the International Chamber of Commerce, and he was in many other ways a prominent figure in international commerce. His wife, Alys Marie Lüling, whom he married in 1888, died in 1932. There were no children, and the barony and baronetcy are now extinct.

GLIDERS. The art of motorless flight made considerable progress during 1937. The greatest advance was made in Europe, where the leading nations have subsidized the sport as a means of training pilots, and performance records have risen steadily. The two-year distance record of 313 miles was broken in Russia by Victor Rastorgoueff, whose remarkable flight of 405 miles now stands as the world record. Through improvement in instrument soaring technique in clouds, the Germans have raised the altitude record to 19,685ft. They also hold the record for duration: 40hrs. 55mins. The women's record, which was broken by Fräulein Fritsch in Germany on July 4, in a flight of 220 miles, was beaten five days later by Feodora Schundt, who remained in the air for 23hrs. 42mins. On July 14 a British two-seater, in a flight lasting 8hrs. 48mins., established the first international duration record for sailing with two occupants, and new British gliding records were set up at the British National Gliding Competition in September. The American records have not been bettered, but progress has been made. During the eighth annual National Soaring Contest at Elmira, N.Y., a total of 2,224 miles were flown cross-country, twice the best figure of any previous year. There are now more than 100 clubs affiliated with the Soaring Society of America.

Fox Photos]

DUNSTABLE, 1937. THE FALCON III TWO-SEATER GLIDER DROPPING THE UNDERCARRIAGE AFTER TAKING OFF

GOEBBELS, JOSEF (1897–), German politician, born Oct. 29, 1897, at Rheydt in the Rhineland; studied at Bonn and several other German universities, and took the degree of Ph.D. at Heidelberg in 1920. Active as a newspaper writer in the Rhineland, he became District Leader (*Gauleiter*) of the Nazi party in Berlin in 1926, and built up the party membership and organization in north Germany while Hitler was building it up in south Germany. He founded in 1927, and has edited ever since, the party newspaper, *Der Angriff* (' The Attack '). In 1929, he was appointed Reich party propaganda leader, and in 1933, after Hitler assumed power, Reich minister for propaganda and enlightenment and president of the Reich culture chamber, with control over the press, radio, and other cultural activities. He has been a member of the Reichstag since 1928. He is the author of many works, of which the best known are: *Die zweite Revolution; Michael; Nazi Sozi; Kampf um Berlin; Rassenfrage und Weltpropaganda; Vom Kaiserhof zum Reichskanzlei.* He married in 1931 Magda Quandt (born Ritschel), and has four children.

(S. B. F.)

GOLD. Under the stimulus of the high currency price, the world production of gold continued to increase in 1937, though not so rapidly as in the previous year. The approximate output may be estimated at 35,500,000 fine ounces, compared with 32,960,000 in 1936 and 29,554,000 in 1935.

GOLD PRODUCTION OF LEADING COUNTRIES *
(In Thousands of Fine Ounces)

	1935	1936	1937 †
UNION OF SOUTH AFRICA	10,774	11,336	11,738
U.S.S.R.	4,500	5,400	6,000
UNITED STATES	3,163	3,714	4,089
CANADA	3,285	3,748	4,055
AUSTRALIA	915	1,170	1,366
WORLD	29,554	32,960	35,500

* Supplied by Union Corporation Limited. † Estimated.

South Africa was still by far the largest producer, her output having been approximately 11,740,000 fine ounces, as against 11,336,000 in 1936 and 10,774,000 in 1935. Her production in 1937—obtained from crushing about 51,000,000 tons of ore, as against 48,600,000 tons in 1936—would have been still larger but for a reduction in the grade of ore milled, which averaged 4·46dwt. of fine gold, compared with 4·57dwt. in 1936 and 4·73dwt. in 1935. The policy of lowering the grade has been progressively pursued since the rise in the price of gold following abandonment of the gold standard by South Africa at the end of 1932, the object being to prolong the life of the mines and lessen the incidence of taxation.

It seemed at one time last year that this policy would have to be reversed because of the prospect of a sharp increase in working costs and a fall in the price of gold. Actually, however, working costs were only slightly higher and the average price slightly less than in 1936. The declared estimated working profit amounted to close on £31,700,000 (12*s*. 5*d*. per ton of ore milled), compared with £32,054,000 (13*s*. 2*d*. per ton of ore milled) for 1936. Dividends amounted to £17,071,000, against £17,296,000, all but a small proportion of the balance being payable to the Union government in the form of taxation and royalties.

The proved payable ore reserves of the producing mines of the Rand are sufficient to ensure many more years of profitable production on last year's scale—provided of course that there is no very adverse movement in costs or in the value of gold. This satisfactory position is due partly to active development and exploration, and partly to the sharp rise in the price of gold since 1932, which has brought within the zone of payability vast quantities of ore previously classed as unpayable. The cost of developing ore on the producing mines has been financed almost entirely out of profits, as also has been a considerable proportion of the capital expenditure required for extensions to milling capacity, shaft sinking, etc.—which expenditure has been estimated to have exceeded £20 millions over the past five years.

Equally important for the future of the Rand has been the progress made in opening up extensions of the Witwatersrand gold field far to the west and east of the present central producing field. Development work on these new auriferous areas was intensified in 1937 at a cost of several million pounds, and the results have on the whole been encouraging, particularly in the Far West Rand, where the existence of a rich field, which may ultimately rival the Central Rand, has now been definitely established.

Russia, whose output has expanded rapidly in recent years, ranks next to South Africa as a gold producer. Reliable estimates for that country are difficult to obtain—but competent authorities outside the Union place the Soviet's output for 1937 at not less than 6,000,000 fine ounces, compared with 5,400,000 in 1936. There is little reason to doubt that under more efficient management output could be still more rapidly increased, the more so as the bulk of the production in the Soviet Union is obtained by dredging and the rest by mining at shallow depths, which obviates heavy capital expenditure.

The United States held third place with an output of 4,089,000 ounces, against 3,714,000 in 1936, the Alaskan mines again providing a large proportion of the total.

Canada followed close with an estimated output of 4,055,000 fine ounces, compared with 3,748,000 in 1936. The largest producing provinces were Ontario (approximately 64 per cent.), Quebec (17 per cent.), and British Columbia 12 per cent.).

Next in importance was Australia, whose production rose from 1,170,000 fine ounces in 1936 to 1,366,000 last year, though in certain directions there was evidence of serious impoverishment of ore bodies, suggesting that the rate of expansion may not be maintained in future years.

Most other gold-producing countries also increased their output, the progress made by the Gold Coast, and the Philippines being particularly noteworthy. (P. F.)

Wide World Photos]

AERIAL VIEW OF JOHANNESBURG GOLD MINE. THE GIGANTIC MINE DUMPS GIVE AN IDEA OF THE SIZE OF THE UNDERTAKING

GOLD COAST. A British crown colony and protectorate in west Africa on the Gulf of Guinea, between long. 3°7′W. and 1°14′E., and stretching from the sea to 11°N.lat ; consisting of the Gold Coast Colony, and the protectorates of Ashanti and the Northern Territories. The mandated territory of West Togoland is governed under the same administration. The governor is Sir A. W. Hodson, K.C.M.G., and the capital is Accra. A legislative council (for the colony only) has 15 official and 14 non-official members.

Area and Population.—Area: colony 23,937sq.m.; Ashanti 24,379sq.m. ; Northern Territories 30,486sq.m. ; West Togoland 13,041sq.m. ; total area 91,843sq.m. ; population (1931 census) 2,869,854 (est. 1935) 3,527,483, including 3,078 non-Africans. The chief towns are Accra (60,726), Cape Coast, and Sekondi. There are 23 government schools, besides state-aided missions. The Prince of Wales's College, Achimota, unique in Africa, is a boarding school designed to carry children from kindergarten to university standing ; it originally cost about £555,000 and has a yearly grant of £48,000.

Trade and Communications.—The government railways have main lines from Takoradi to Kumasi (173m.) and from Kumasi to Accra (193m.), and, with branch lines, a total of 500m. There is a fully equipped harbour at Takoradi, opened in 1928. The harbour receipts are now sufficient to pay all working expenses, interest on capital expenditure, and to provide a contribution to a renewals fund. There are 6,200m. of motor roads, of which 1,967 are Class I. Aerodromes are in preparation at Accra and Takoradi. The Gold Coast will thus benefit from the West African air services and the links with the Imperial Airways main route at Khartoum.

The chief product is cocoa, the output of which in 1933 was 41 per cent. of the world supply. Gold, manganese, and diamonds are also produced. Exports (1934–35) amounted to £8,117,456 ; and imports to £4,848,800.

The notes and coins of the British West African Currency Board are in circulation. Estimated revenue for 1937–38, £3,613,302, and expenditure £3,610,854. There is no direct taxation, customs and excise being relied upon for up to 70 per cent. of revenue. In 1937 the financial administration of the colony was reorganized, and the new office of Financial Secretary created. A new town hall at Accra was almost completed during the year.

The Gold Coast Regiment of the Royal West African Frontier Force has an establishment of 37 officers, 30 British warrant and non-commissioned officers and 883 Africans.

See Gold Coast Handbook, 1937 ; Paul Redmayne, *Gold Coast Yesterday and To-day*, 1938.

GOLD RESERVES AND GOLD STANDARD. A nation's gold reserves are more accurately defined as its monetary gold reserves—that is, the gold coin in circulation and the gold bullion or specie held by the nation's central bank or other monetary authority. A more precise definition would exclude gold coin in circulation, though today the amount of such must be negligible. In normal times it would be fair to limit the definition to the gold held by the central bank as backing for the note circulation and for the deposits held with the central bank by the government, the commercial banks, and others. This gold in effect forms the basis of the national supply of currency and credit, and as the central bank gains or loses gold, it must begin to consider measures for enlarging or contracting the supply of credit. Since 1931, however, the gold reserves of many countries, including England, France, and the United States, are held partly by the central bank and partly by the Exchange Equalization Account (*see* EXCHANGE EQUALIZATION FUNDS). The latter gold does not lie at the basis of the national supply of currency and credit, and variations in the amount of Exchange Account gold do not affect the internal supply of credit.

The importance of an adequate gold reserve is twofold. First, gold is the only medium in which foreign debts can be paid with certainty, because no foreign creditor can be forced to accept a country's paper currency, or bills or cheques drawn therein. Next, gold is the only basis of currency and credit in which people all the world over believe, and so it is the only guarantee of confidence. In England, it is true, people believe implicitly in the pound, although since 1931 it has been impossible to change it into gold except with the consent of the authorities. On the continent of Europe the belief in gold persists.

If a currency is ultimately changeable into gold at the public's behest and at a fixed rate of so many units of currency per ounce of gold, then a country is said to be on the gold standard. There are three forms of gold standard:

(*a*) The full gold standard: gold coins circulate, and the central bank is bound to redeem its notes on demand at a fixed rate. The central bank must also buy and sellgold in any quantities at fixed prices.

(*b*) The gold bullion standard: gold coins do not circulate. The central bank is only bound to buy and sell gold in bars of 400 ounces. This system was in force in England from 1925 to 1931, during which time a gold bar was worth about £1,700 sterling. The result was that the Bank of England only bought and sold gold in large quantities. This fulfilled the needs of bankers, who had foreign exchange differences to settle, but prevented gold from dribbling into internal circulation.

(*c*) The gold exchange standard: the central bank was not bound to buy and sell gold, but only to buy and sell bills, cheques, and other instruments drawn in currencies on the full gold or gold bullion standard. This system enjoyed a considerable vogue up to 1931, but the suspension of the gold standard in England gave it its death-blow, the reason being that sterling was a favourite currency for foreign central banks to buy and sell.

The essence of any form of gold standard is:

(1) The central bank must buy and sell gold at a fixed price.

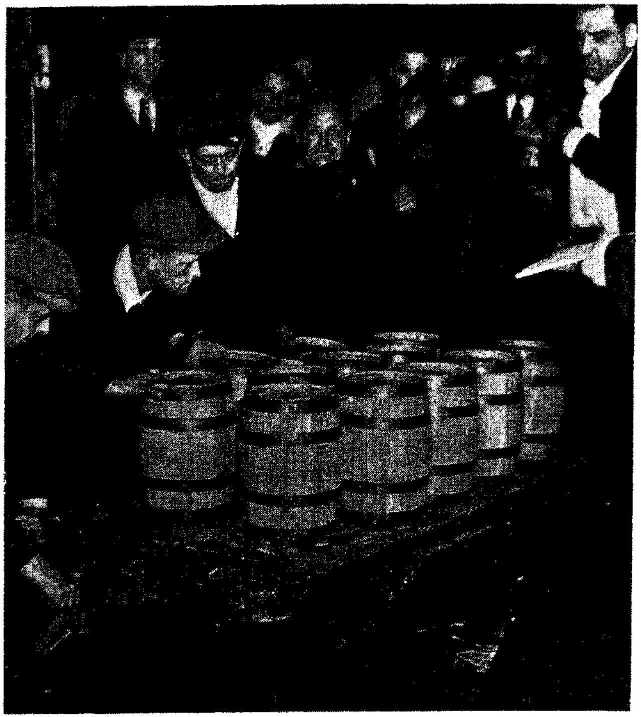
(2) The amount of notes in circulation and deposits held by the central bank must bear a defined relation to its gold reserves. In many countries the central bank must hold gold up to a given percentage of its notes and deposits; though of course it can and usually does hold gold in excess of that percentage. In England the fiduciary note issue is fixed by the government, and all other notes must be backed pound for pound by gold.

(3) It follows that as gold enters or leaves the central bank, the supply of credit may have to be expanded or contracted. Thus internal credit conditions are linked up through gold with foreign exchange movements and the balance of trade.

(4) There must be no restrictions upon the importation or exportation of gold.

Since 1931, many countries, including England, have suspended the gold standard. They did so by abrogating the first of the above conditions. One result was a depreciation since 1931 of their currencies in terms of gold, that is, the price of gold rose. Some countries (not England) took the opportunity of writing-up their gold reserves, while the rise in the price of gold has made gold-mining more profitable and so increased the world supply of gold. Hence at a time when most countries are off gold, the world's gold reserves paradoxically enough are larger than ever.

To illustrate this, world gold production was 19·6 million ounces in 1929, 22·4 million ounces in 1932, and 35 million ounces in 1936. The Bank of England's gold reserves, which have not been written-up, have risen from £146 millions in 1929 to £326 millions in Nov. 1937. United States monetary gold stocks (written-up in the ratio of 59·06 : 100 in 1934) have risen from $2,857 millions in 1929 to $12,804 millions in Nov. 1937. A wider comparison between 1929 and 1936 is shown in the table in the next column.



Wide World Photos]

GOLD BEING SHIPPED FROM NEW YORK TO FRANCE, SEPTEMBER 1937

MONETARY GOLD STOCKS: END OF YEARS

Central Banks of		1929	1931	1936	1929	1931	1936
		(Millions of national currency)			(Millions of fine ounces)		
England	£	146	121	314	34	28	74
United States	$	2,857	2,988	11,251*	138	145	322
France	Frs.	41,668	68,481	60,359	79	129	77
Germany	Rm.	2,265	985	66	26	11	0·8
Holland	Fl.	447	887	720	9	17	14
Belgium	Bel.	1,175	2,553	3,736	8	17	21
Switzerland	S.Fr.	581	2,299	2,683	5	21	19
Total		—	—	—	299	368	528

* Total monetary gold stocks.

While most countries have suspended the gold standard, in practice international differences are still largely settled in gold. The gold so used, however, comes into or goes out of Exchange Accounts, leaving the central banks' gold reserves intact. Hence each country can run its own internal credit policy without having the supply of credit continually upset by changes in the size of its central bank's gold reserves. This was an advantage in 1933–37, when most of the exchange fluctuations and consequent gold movements were due to sudden transfers of capital about the world, and bore no relation to the internal and commercial financial position of a country. Whether it will always be an advantage for a country to divide its Gold Reserve between its central bank and an Exchange Account is open to argument, with weighty reasons on both sides. (N. E. C.)

GOLF. The Royal and Ancient Golf Club of St. Andrews, like most governing bodies in sport, moves slowly, and it was therefore a matter of some moment in the golfing world when, during the past year, it decided to alter its constitution. The club now has one main committee of 16 members, a quarter of whom must retire in rotation each year. This committee is responsible for choosing all the sub-committees, who in their turn have the power to co-opt a limited number of outside members who are not actually members of the club.

This move had the appearance of making the government of the game more democratic and gave general satisfaction.

HENRY COTTON, ENGLISH OPEN GOLF CHAMPION, 1937

Despite the usual rumours, no change was made in the specification of the golf-ball, though the new committee at once had the matter under their active consideration.

The Open Championship, played on the 'marathon' course at Carnoustie, became virtually the championship of the world on account of the presence of the entire American Ryder Cup team. It was won in brilliant fashion by Henry Cotton (Ashridge, Herts), whose final round of 71 in blinding rain was reckoned one of the finest achievements in golf history.

Reginald Whitcombe, another Englishman, and Charles Lacey, brother of the English professional, but now resident in the United States, were second and third.

The United States won the Ryder Cup at Southport by three matches, but Cotton, following his Carnoustie triumph, beat Densmore Shute, American match-play champion, by five and four in a 72-hole £500 challenge match at Walton Heath. Over a course measuring more than 7,000 yds., Cotton's score was ten below an average of fours.

C. A. Whitcombe won the new Harry Vardon Memorial Trophy with a season's average of 71·64 per round.

In amateur golf Robert Sweeny, a young American player who learnt most of his golf in England, proved himself to be Britain's best player by winning the Championship at Sandwich. He beat Lionel Munn by three and two in the final.

Miss Jessie Anderson, a youthful Scottish golfer of diminutive stature, won the Ladies' Championship at Turnberry in most convincing style, beating a fellow-countrywoman, Miss Doris Park, in the final. Both are daughters of professional players.

Coupled with Miss Anderson, Miss Wanda Morgan was the outstanding figure of the year. She won the English Ladies' title for the second year in succession at St. Enodoc, Cornwall, and impressed every critic with the easy rhythm of her swing.

Ladies' golf, however, suffered an irreparable loss with the sudden death, at Turnberry, of Miss Bridget Newell. Runner-up to Miss Pamela Barton in the previous year, she also held the distinction of being a qualified barrister and Britain's youngest magistrate.

The results of the national championships were as follows:

England.—Amateur, J. J. F. Pennink (Royal Ashdown Forest). Ladies', Miss Wanda Morgan (Rochester and Cobham).

Scotland.—Amateur, H. McInally (Ardeer). Ladies', Mrs. A. M. Holm (Troon).

Ireland.—Open, Bert Gadd (West Cheshire). Open Amateur, J. Fitzsimmons (Bushfoot). Native Amateur, J. Bruen (Cork). Native Professional, P. J. Mahon (Royal Dublin).

Wales.—Amateur, D. H. Lewis (Ashburnham). Ladies', Mrs. Graham Emery.

It is worthy of note that H. McInally, winner of the Scottish native championship, is a miner by trade, and had actually worked a full night shift immediately before winning his way through to the semi-final, a feat of exceptional physical endurance.

The continental championships became increasingly popular with British players, who achieved a fair degree of success. Henry Cotton, on a busman's holiday, won the German and Czechoslovak open championships, starting the tournament at Bad Ems with a 63, which he described as one of the finest rounds of his life.

Harry Bentley (Hesketh) won the German Amateur title for the second time, also at Bad Ems. No fewer than 46 British players went in quest of this title, of which Henry Longhurst was at the time the holder.

Having beaten France in the international match at Chantilly, many of the English team took part in the French Amateur Championship at Morfontaine, Paris. It was, however, won by the French native champion, Jacques L'Eglise, who defeated Henry Longhurst by one hole in the 36-hole final.

Miss Kathleen Garnham (The Naze) won the French Ladies' title, beating in the final Mrs. Rhodes, of Yorkshire, who in turn won the Belgian Ladies' Championship.

(H. Lo.)

United States.—The surge of golf interest in America, retarded appreciably during the economic depression, continued on the upbeat throughout 1937. Club organizations, infused with newly recruited memberships, gave the game a firmer structure, and golf exhibited signs of growing pains again, what with the renewed clamour for legislation to restrict the size, weight, and number of clubs to be permitted a player, discussion in many circles of the advisability of reconstructing courses to halt the onslaught on par, and the proposal to reduce the resilience of golf balls. As the year grew to a close, none save the limitation of clubs had found its way into the rules. Where a player was permitted unbridled latitude in the number of implements, the United States Golf Association ruled that after Jan. 1, 1938, a competitor would be permitted to carry no more than 14 clubs. The United States open championship, over the Oakland Hills Country Club course of Detroit, Mich., was won by Ralph Guldahl, with a record 72-hole score of 281. Sam Snead, a powerful youth from West Virginia, in a tour in which professional golfers participated, travelling from one locality to another to compete in tournaments sponsored mainly by resorts and chambers of commerce in California, Florida, Texas, Georgia, and the Carolinas, became the phenomenon of golf. His exploits earned him a place in the United States team for the Ryder Cup matches, a biennial competition between picked teams of United States and British professional golfers. The United States team won the Ryder Cup matches on British

Fox Photos]

ROBERT SWEENY, ENGLISH AMATEUR GOLF CHAMPION, 1937

soil for the first time since their inception. Heretofore the American and British teams were always victorious when playing on home soil.

There was an innovation in the contest for the United States amateur championship. For the first time in the 41 years since its inception, it was contested on a course in the Pacific North-west. Alderwood Country Club, of Portland, Ore., was the scene, and John Goodman, of Omaha, Neb., won the title when he defeated Ray Billows, Poughkeepsie, N.Y., 2 up in a 36-hole final. Goodman became the fifth player in the history of American golf to win both the open and amateur championships, having won the open title in 1933. Others to win both the open and amateur championships were Robert Tyre Jones, Jn., Charles Evans, Francis Ouimet, and Jerome D. Travers.

The international flavour which spiced the 1936 United States women's championship was missing in 1937, when illness prevented Miss Pamela Barton, of Great Britain, from defending the laurels she won at Canoe Brook, Summit, N.J., in 1936. The 1937 championship was contested at Memphis, Tenn., and the victor was Mrs. Estelle Lawson Page, of Chapel Hill, N.C., who defeated Miss Patty Berg, Minneapolis, Minn., 7 and 6 in the 36-hole final. Mrs. Page won the medal with a 78, and was the only player in the field to score better than 80, duplicating her qualifying feat of 1936.

Although a victory in the Canadian open championship was his only national tournament victory in a decade of brilliant golf, Harry Cooper continued to lead professionals in average scoring. Cooper maintained an average of less than 72 strokes per round in 25 tournaments, winning the Harry Vardon Memorial trophy presented by the Professional Golfers Association of America. Cooper's prize winnings for the year reflected the return of golfing prosperity. He won over $13,000 in cash, more than double the amount collected two years ago by Paul Runyan, the season's leading money winner. Byron Nelson, Reading, Pa., scored two important victories during the year, beating Guldahl by a whirlwind finish in the Master's tournament at Augusta, Ca., an event sponsored by Robert T. Jones, and defeating Henry Picard in the finals of the $12,000 Belmount, Mass., open, the richest professional tournament in America. In late season links invasion of Central and South America, players from the United States won three titles.

Picard won the open title of the Argentine ; Goodman defended successfully the Mexican amateur title he won in 1936, and Mrs. Dan Chandler, Dallas, Texas, won the Women's Mexican championship.

GONORRHOEA : *see* VENEREAL DISEASES.

GORDON, CHARLES WILLIAM ('Ralph Connor'), Canadian author and churchman ; born at Indian Lands, Ont., Sept. 13, 1860 ; died in Winnipeg, Oct. 31, 1937. His best-known books were *Black Rock,* and, pre-eminently, *The Sky Pilot.* He was for 30 years pastor of St. Stephen's Church, Winnipeg, served as a chaplain in the World War, and was prominent in the movement leading to the organization of the United Church of Canada in 1925.

GÖRING, HERMANN WILHELM (1893–), German statesman, born at Rosenheim in Bavaria on Jan. 12, 1893, achieved high distinction during the World War in the Air Force as an 'ace' and as Commander of the Richthofen Squadron. After the War he served two years in civil aviation in Sweden, where he married Karin von Fock of Stockholm ; after her death in 1931, he married Emmy Sonnemann of Hamburg in April 1935. As a result of participating with Hitler in the abortive Munich Beer Hall Putsch of Nov. 1923, he had to flee to Italy. Returning to Germany in 1927, he became active in the Nazi party, and was elected member of the Reichstag (1928–) and president of the Reichstag (1932–). When Hitler was appointed Chancellor, Göring had new tasks and honours heaped upon him. In 1933 he became Reich minister for Air Forces, Prussian minister president, minister of the interior with charge over the Prussian police, theatres and opera, and general of Infantry. In 1934, his added titles included Master of the Reich forests and hunting, and Supreme Commander of the Air Forces. In 1936, as Commissar for the execution of the four-year plan, he gradually assumed supreme direction of the whole industrial life and foreign trade of Germany, and finally, in Nov. 1937, superseded Dr. Schacht as economic dictator of Germany. He possesses great energy and driving force, and, unlike many Nazis, is not violently anti-Semitic. In power he stands next to Hitler, and is generally regarded as Hitler's probable successor. He is the author of *Aufbruch einer Nation* (1934) and *Der Geist des neuen Staates* (1934). *See* Erich Gritzbach, *Hermann Göring, Werk und Mensch* (Munich, 1937). (S. B. F.)

GOVERNMENT DEPARTMENTS, BRITISH. The following were in 1937 the ministers, permanent under-secretaries, etc., of the more important of the Government Departments of Great Britain :

Admiralty, The Board of : *First Lord,* Rt. Hon. A. Duff Cooper ; *Permanent Secretary,* Sir R. H. Archibald Carter.

Agriculture and Fisheries : *Minister,* Rt. Hon. W. S. Morrison ; *Permanent Secretary,* Sir Donald Fergusson.

Air Ministry : *Secretary of State,* Rt. Hon. Viscount Swinton ; *Secretary,* Col. Sir Donald Banks.

Burma Office : *See* India Office.

Cabinet Office : *Secretary,* Col. Sir Maurice Hankey.

Civil Service Commission : *1st Commissioner,* Sir Roderick Meiklejohn.

Colonial Office: *Secretary of State,* Rt. Hon. W. Ormsby Gore; *Permanent Under-Secretary,* Sir Cosmo Parkinson.

Crown Agents for the Colonies: Sir W. F. Gowers, H. C. Thornton, and J. E. W. Flood.

Commissioners of Crown Lands: *Commissioner,* the Minister of Agriculture and Fisheries (*ex-officio*); *Permanent Commissioner,* C. L. Stocks.

Customs and Excise, Board of: *Chairman,* Sir G. Evelyn P. Murray.

Committee of Imperial Defence: *Chairman,* the Prime Minister; *Deputy Chairman and Minister for Co-ordination of Defence,* Rt. Hon. Sir Thomas Inskip; *Secretary,* Col. Sir Maurice Hankey.

Dominions Office: *Secretary of State,* Rt. Hon. Malcolm MacDonald; *Permanent Under-Secretary,* Sir Edward Harding.

Duchy of Lancaster: *Chancellor,* Rt. Hon. Earl Winterton; *Vice-Chancellor,* Sir John Bennett.

Education, Board of: *President,* Rt. Hon. Earl Stanhope; *Permanent Secretary,* M. G. Holmes.

Foreign Office: *Secretary of State,* Rt. Hon. Anthony Eden (resigned Feb. 20, 1938); *Permanent Under-Secretary,* Sir Robert Vansittart (appointed, Jan. 1, 1938, Chief Diplomatic Adviser to the Foreign Secretary; succeeded as Permanent Under-Secretary by Sir Alexander Cadogan).

Health, Ministry of: *Minister,* Rt. Hon. Sir Kingsley Wood; *Secretary,* Sir George Chrystal.

Home Office: *Secretary of State,* Rt. Hon. Sir Samuel Hoare, Bt.; *Permanent Under-Secretary,* Sir R. R. Scott.

India Office: *Secretary of State,* the Most Hon. the Marquess of Zetland; *Permanent Under-Secretary,* Sir Findlater Stewart.

Inland Revenue, Board of: *Chairman,* Sir Edward R. Forber.

Labour, Ministry of: *Minister,* Rt. Hon. Ernest Brown; *Secretary,* Sir T. W. Phillips.

Patent Office: *Comptroller-General,* M. F. Lindley.

Paymaster General's Office: *Paymaster General,* The Lord Hutchison of Montrose.

Pensions, Ministry of: *Minister,* Herwald Ramsbotham; *Permanent Secretary,* Sir Adair Hore.

Post Office: *Postmaster-General,* Maj. the Rt. Hon. G. C. Tryon; *Director General,* Sir Thomas Gardiner.

Privy Council Office: *Lord President,* Viscount Halifax; *Clerk of the Council,* Col. Sir Maurice Hankey.

Public Record Office: *Keeper of the Records,* the Master of the Rolls; *Secretary,* C. T. Flower.

Public Trustee Office: *Public Trustee,* Sir Ernest Fass.

Scottish Office: *Secretary of State,* Rt. Hon. Walter Elliot; *Under-Secretary of State,* Sir Horace P. Hamilton.

Stationery Office, H.M.: *Controller,* Sir William R. Codling.

Trade, Board of: *President,* Rt. Hon. Oliver Stanley; *Permanent Secretary,* Sir William Brown.

Transport, Ministry of: *Minister,* Rt. Hon. Leslie Burgin; *Permanent Secretary,* L. Browett.

Treasury: *Prime Minister and First Lord,* Rt. Hon. Neville Chamberlain; *Chancellor of the Exchequer,* Rt. Hon. Sir John Simon; *Permanent Secretary and Head of H.M. Civil Service,* Sir Warren Fisher.

War Office: *Secretary of State,* Rt. Hon. Leslie Hore-Belisha; *Permanent Under-Secretary,* Sir Herbert J. Creedy.

Works and Public Buildings: *First Commissioner,* Sir Philip Sassoon, Bt.; *Secretary,* Sir Patrick Duff.

GOVERNMENT EXPENDITURE. One of the most striking contrasts between pre-war days and the present time is the enormous growth all over the world in government expenditure. In England, where the budget is subject to fewer qualifications than is the case in many other countries, this growth of expenditure can be illustrated very simply. Perhaps the clearest illustration is the following table, taken from the *Economist's Budget Supplement* of April 10, 1937:

Period*	National Income‖	Total Expenditure†		National Debt¶		Defence		All Other	
	£ mn.	£ mn.	%	£ mn.	%	£ mn.	%	£ mn.	%
1860–69§	899	66	7·3	26	2·9	27	3·0	13	1·4
1870–76§	1,177	70	5·9	27	2·3	26	2·2	17	1·4
1877–85§	1,242	79	6·4	29	2·3	30	2·4	20	1·7
1886–93§	1,410	80	5·7	26	1·8	32	2·3	22	1·6
1894–1903§	1,666	130	7·8	24	1·4	69	4·1	37	2·3
1904–1910§	1,940	138	7·1	27	1·4	62	3·2	49	2·5
1911–13§	2,241	165	7·4	24	1·1	73	3·3	68	3·0
1924 .	4,035	745	18·5	357	8·8	115	2·9	273	6·8
1929 .	4,384	771	17·6	355	8·1	113	2·6	303	6·9
1932 .	3,844	800	20·8	309	8·0	103	2·7	388	10·1
1935 .	4,530	776	17·1	224	4·9	137	3·0	415	9·2
1936 .	(4,850)	830	17·1	224	4·6	186	3·8	420	8·7
1937 .	(5,170)	936‡	18·1‡	224‡	4·3‡	278‡	5·4‡	434‡	8·4‡

* Figures of National Income refer to calendar years, figures of expenditure to financial years ended March 31 of following calendar year.

† Including Road Fund expenditure, but not Post Office.

‡ Estimate. § Annual average.

‖ Figures are taken from *National Income and Outlay,* by Colin Clark (Macmillan, 1937), pp. 88, 90, and 232; they represent net National Income, as defined by Mr. Clark. The figures for 1936 and 1937 are very tentative guesses for which Mr. Clark is not responsible; the 1937 figure in particular is necessarily very approximate. ¶ Inc. Sinking Fund.

Since 1911–13, total expenditure has increased in the ratio of 100 to 570. It has risen from 7·1 to 18·1 per cent. of the national income. Even since 1924, it has risen absolutely, though not relatively, to the national income.

What are the principal causes of this enormous increase since pre-war days? The first and obvious answer is the World War, which raised the British national debt in five years from £650 to £8,000 millions, which latter figure also represents the size of the national debt to-day. In consequence, the interest and other annual charges of the national debt have risen from a mere £24 millions in 1911–13 to a peak cost of £357 millions in the middle 'twenties. Since then cheap money and conversion have reduced them to £224 millions, but they are still larger than the whole of the pre-war budget.

Next is the rise in prices, wages, and the general cost of government. While this adds to the absolute size of the budget, it does not necessarily add to the burden on the nation, for the national income has also expanded for the same reason. In 1911–13, expenditure of £165 millions equalled 7·4 per cent. of the then national income. To-day expenditure in the same proportion would be as much as £380 millions.

It is now possible to make a few simple calculations. The 1911–13 expenditure, *less* the cost of the national debt, would come to £141 millions, or 6·3 per cent. of the national income: 6·3 per cent. to-day is £326 millions. Add on £224 millions, representing the present cost of the national debt, and we get a total of £550 millions. This represents very roughly the portion of to-day's expenditure of £936 millions due to the above two causes alone. The balance of £386 millions must arise from other causes.

These are three in number. First, there is the growing cost of rearmament. Munitions of war are far more complicated and costly than they were 30 years ago. To mention the most obvious example, the Royal Air Force, which did not exist in 1913–14, has an estimated cost of £82·5 millions in 1937–38. Similarly, the cost of the navy has risen from £48·8 millions in 1913–14 to £105 millions in 1937–38, and that of the army from £28 to £91 millions. Part of these last two increases is due to the intervening rise in prices, and so is included under the calculations in the previous paragraph ; but there is no doubt that, especially since the beginning of rearmament just over two years ago, defence expenditure explains part of the increase in the burden of expenditure.

Next, the government plays a far more active part in the general business of the country than it did before the War. Subsidies are now granted to various kinds of farm produce and also to shipping. The functions of the Board of Trade, the Ministry of Agriculture, and the Department of Overseas Trade have been greatly extended. Without expressing any opinion upon whether the benefits of these new activities are in proportion to their cost, there is no doubt that in the aggregate they represent a substantial addition to national expenditure.

Finally, there is the rapid growth of social reform expenditure. In 1911–13 this was in its infancy. Old Age Pensions had only been inaugurated a few years before. The first Insurance Act, establishing health and unemployment insurance, only dates from these years, and the scope of unemployment insurance was then limited to certain trades. The cost of education to the government (as distinguished from the local authorities) was only £15 millions. There were no war pensions, no widows' and orphans' pensions, no expenditure upon housing, slum clearance, or the abolition of overcrowding. The derating of industry and the substitution of new grants-in-aid to local authorities only dates from 1929.

The current cost to the government and local authorities is illustrated by the following table, relating to 1934–35 :

	Million £'s					Number of persons (a) benefiting directly (Millions)
	Expenditure	Receipts from			Total Receipts	
		Local Rates	Parliamentary Votes or Grants	Other Sources (Fees, etc.)		
Unemployment:						
Insurance benefit .	52·9	—	21·1	42·1	63·3	12·5
Transitional benefit .	46·2	—	46·2	—	46·2	
Health Insurance .	36·7	—	6·7	33·8	40·5	18·5
Pensions :						
Widows, etc.	43·2	—	—	23·6*	23·6*	2·1
Old Age .	42·4	—	42·4	—	42·4	1·8
War . .	41·2	—	41·2	—	41·2	0·9
Education .	106·3	48·5	49·1	8·7	106·3	8·0
Housing . .	46·1	2·9	15·7	27·5	46·1	—
Poor relief .	49·2	45·4	0·4	3·4	49·2	1·9
Other . .	23·8	20·8	0·4	2·8	23·8	—
Total .	488·0	117·5	223·0	141·9	482·5	—

* Exchequer contribution of additional £13 millions to Treasury Pensions Account.

(*a*) Unemployment and Health insurance : insured persons.

The government's share is £223 millions, compared with a much smaller amount in 1911–13. In fact, to-day's cost is considerably more than the whole of the 1911–13 budget, and is comparable with the present cost of the national debt.

These roughly are the main causes of the size of present-day budgets. Expenditure is high to-day, both absolutely and relatively to the national income. Nor, with the rearmament programme ahead, can the British tax-payer look for any relief in the near future.

Many of these causes are not peculiar to Great Britain, and budgets all over the world have increased to an enormous extent compared with pre-war days. Thus between 1934–35 and 1936–37 alone, United States Federal expenditure has risen from $6,802 to $8,001 millions, and both these amounts include over $3,000 millions for 'recovery and relief'. In France, the latest (1937) budget placed ordinary expenditure at frs. 52,691 millions, and to this should be added extraordinary expenditure of frs. 14,100 millions. Germany has issued no returns of expenditure since March 31, 1935. Gross Reich revenue in the year 1936–37 was RM 11,492 millions, and disclosed borrowing was RM 1,903 millions. Even these two together did not provide enough funds to meet current expenditure, for there was also a substantial amount of undisclosed short-term borrowing.

It is, in fact, extremely difficult to determine the current expenditure of many foreign governments, or to make a valid comparison with pre-war days. Currency changes are one complicating factor, as in the case of France. Concealed expenditure on war or rearmament also results either in total expenditure not being disclosed (*e.g.* Germany) or, in throwing some doubt upon the exact significance of the disclosed figures (*e.g.* Italy and Japan). A further complication, which as we have seen exists in Great Britain, is the extent to which governments have come to participate in the conduct of business. In its extreme form this is found in the totalitarian States, including both Germany and Italy on the one hand and Russia on the other. It is very noticeable in the United States ever since President Roosevelt first took office. It is noticeable, in greater or less degree, practically all over the world. Much of the money both collected and spent by the government in this way falls outside the budget, and so is a further complicating factor. Also there is a tendency to split up budgets into ' ordinary ' and ' extraordinary ' expenditure, only the former being covered by revenue.

Finally, in most countries there is the constitutional division of expenditure between the Federal government, State or Provincial governments, and municipalities, communes, etc. In many cases the lines of demarcation have been altered since the War. The conclusion to be drawn from the above considerations is that to-day comparison between current and pre-war government expenditure has become almost impracticable. The most that can be said is that current government expenditure is very heavy indeed. (N. E. C.)

GOWRIE, ALEXANDER GORE ARKWRIGHT HORE-RUTHVEN, 1st Baron (1872–), V.C., G.C.M.G., British imperial administrator, second son of the 8th Lord Ruthven, born at Windsor on July 6, 1872, was educated at Eton. Joining the Highland Light Infantry in 1891, he took part in the Sudanese campaign in 1898, and won the Victoria Cross at the age of 27. Lord Gowrie served also as a Special Service officer in the Somali campaign of 1903–04. From 1905 to 1906 he was military secretary to the viceroy of Ireland, and in 1908 to the governor-general of Australia.

In the course of the World War he fought with the

Welsh Guards in France and Gallipoli, being severely wounded, receiving the D.S.O. in 1916, and several mentions indespatches ; in 1917 hew as promoted brigadier-general. From 1920 to 1924 he was in command of the Welsh Guards, and from 1924 to 1928 of the First Infantry Brigade at Aldershot. In the latter year he was appointed governor-general of South Australia, and was created K.C.M.G., and in 1935 was transferred to the governor-generalship of New South Wales. On Aug. 18, 1935, his appointment as governor-general of the Australian Commonwealth was announced, and he assumed office on Jan. 22 of the following year. In Dec. 1935 he was created a baron, and on May 11, 1937, became a privy councillor.

GRAIN CROPS. Under this heading are reviewed the principal grain crops of the world, with the exception of wheat, which is the subject of a separate article (*q.v.*).

Maize.—The United States of America and Argentina each harvested good crops in 1937. The former country obtained the best crop since 1932, thus compensating to some extent for the partial crop disaster of 1936. Crop records were broken in the Union of South Africa, in Yugoslavia, and in Italy. The only country that suffered a setback in maize production was Rumania, where heat and drought caused a reduction in the output of fully six million quarters compared with 1936.

The subjoined statement shows the production in 1937 in the countries for which official estimates are available.

MAIZE CROPS (in quarters of 480lb.)
(000 omitted)

	1937	1936	Average 1931–35
EUROPE (without Russia)	82,400	85,500	76,000
UNITED STATES . .	308,600	177,800	272,300
ARGENTINA . . .	42,100	46,500	39,600
CANADA . . .	750	690	700
SOUTH AND EAST AFRICA	11,800	7,400	8,000
TOTAL .	445,650	317,890	396,600

In addition to the crops tabulated above, maize is grown in Brazil, British India, Mexico, Netherlands East Indies, French Indo-China, Egypt, and Australia, but little or none of it is exported, apart from maize grown in French Indo-China, which country provides France with about two million quarters per annum.

Exporting Countries.—Although the United States of America produces considerably more maize than Argentina, the quantity exported is small in comparison with the exports of the latter country ; indeed, the United States resumed exports only at the end of 1937, after a lapse of some years. Unlike the United States and Balkan countries, Argentina grows the crop primarily for export, retaining at home in a normal year only 10 million quarters of 480lb. The United States home demand is enormous ; about 40 per cent. of the crop is fed to pigs alone.

PRINCIPAL COUNTRIES' SHIPMENTS (in quarters of 480lb.)
(000 omitted)

	1937	1936	Average 1931–35
ARGENTINA . . .	42,260	39,560	31,380
BALKANS . . .	4,035	3,660	5,410
SOUTH AND EAST AFRICA	5,225	895	1,800
UNITED STATES . .	690	75	280
INDO-CHINA . .	1,630	1,680	1,296
TOTAL .	53,840	45,870	40,166

Trade Developments and Prices.—International trade in 1937 developed considerably. Of outstanding importance in the first half of the year was the persistent buying of Argentine maize by the United States, owing to the partial failure of the 1936 crop. Germany bought large quantities, as the government compelled millers to incorporate 10 per cent. of maize flour with wheaten flour for bread making. The mixing of 10 per cent. maize flour with wheat flour was also enforced in Italy.

The consumption of maize in the United Kingdom was maintained at a high rate, and imports during the year totalled 17,933,000 quarters ; in 1936, 17,644,000 quarters were imported. Yellow maize is the only foreign feeding-stuff which can be imported duty free into the United Kingdom. On Jan. 2, 1937, the international price (taking Liverpool as a basis) for parcels of River Plate maize, January shipment, was 24*s.* 3*d.* per quarter of 480lb. ; at the end of Dec. 1937, the quotation was 32*s.* 3*d.* per quarter.

Barley.—Unlike wheat, the acreage under crop shows very little variation from year to year. In 1937 the world barley area comprised 90 million acres, compared with 86 million acres, the average of the five years 1931–35. The largest proportion of the world's crop is grown in Europe, and Soviet Russia ranks as the leading producer. In years of good crops, the United States is the second largest barley grower among the non-European group of countries.

The world's production of barley in 1937 was 179 million quarters of 400lb., contrasted with 174 million in 1936, and 177 million quarters, the average of the five years 1931–35. Neither the crop of Soviet Russia nor that of China is included in the foregoing totals, because no regular estimates were available. It can, however, be said that in a good year 45 million quarters are harvested in Russia. Europe's production in 1937, excluding Soviet Russia, was 80 million quarters, which was three million quarters less than in the preceding year. The United States had a very successful crop year, having harvested 26 million quarters, or 8½ million quarters more than in 1936.

Importing countries draw their supplies mainly from Russia, Rumania, the United States, Canada, Argentina, and Iraq. In recent years, world trade in barley has diminished considerably, and the year 1937 was no exception. All foreign barley entering the United Kingdom is subject to a duty of 10 per cent. *ad valorem*. Restrictions on imports are also imposed in some Continental importing countries.

Rye.—The large producing countries of this cereal are Soviet Russia, Germany, and Poland. The seeded area in Soviet Russia is about 57 million acres, or rather more than double the combined acreage of Germany and Poland. The crop is sown in the autumn and harvested in the following summer. An outstanding characteristic of this cereal is its ability to withstand severe winters. The acreage in Germany and Poland shows little variation from year to year, but Soviet Russia now devotes less land to rye. Rye is chiefly imported by Holland, Belgium, Scandinavian countries, and Austria. Imports into the United Kingdom are negligible, and the total imports of all countries are extremely small in relation to wheat.

The total European crop, excluding Russia, in 1937 was 95 million quarters of 480lb., compared with 99 million quarters in the preceding year. Below average crops were harvested in Germany, Poland, and some countries of south-eastern Europe ; Russia's production is approximately 95 million quarters. Canada, the United States, and Argentina together harvested in 1937 7,100,000 quarters, or about three million more than in 1936.

Oats.—This cereal is grown almost everywhere, and is a crop that thrives with an abundance of rain. It is a matter for surprise that the acreage is so well maintained, seeing that the motor is constantly displacing the horse, both in the towns and on the farms. The United States and Soviet Russia vie with each other in the matter of crop production. Fairly large crops are also raised in Canada, Germany, and France. The total world production in 1937, exclusive of Soviet Russia, was 327 million quarters of 320lb., compared with 292 million in 1936. Soviet Russia produces in a good year about 130 million quarters.

International trade is becoming more and more restricted owing to very high import duties in many countries. At one time, oats were imported into the United Kingdom from practically every exporting country, but this is no longer possible. A duty of 3*s.* per cwt. of 112lb. on all non-Empire oats now almost precludes their importation.

Rice.—India, the big producer of rice, harvested a very good crop in 1937. The output of 28,253,000 tons of 2,240lb. was approximately five million tons larger than that of the preceding year; the average crop of the five years 1932–36 was, roundly, 26 million tons. Practically the whole of India's crop is consumed at home. Japan also was blessed with a splendid crop in 1937; the output was estimated at 9,252,000 tons against 7,890,000 in 1936 and 7,200,000 tons in 1935.

The crops of the principal exporting countries—namely, Burma, Siam, and Indo-China were slightly smaller in 1937 than in the preceding year, and, of course, the surplus available for the international trade was reduced correspondingly.

The total estimated surplus in 1937 of the three countries above was 5,680,000 tons, or some 700,000 tons below the average of the quantity exported in the five years 1932–36. The largest part of the exportable surplus of Burma, Indo-China, and Siam is marketed in non-European countries. European imports in the five years 1932–36 averaged slightly more than 1,100,000 tons. (G. P. B.)

GREAT BRITAIN AND NORTHERN IRELAND, UNITED KINGDOM OF. This comprises the main island of Great Britain, with numerous smaller islands off the English and Scottish coasts, and the six north-eastern counties of Ireland. It is a constitutional monarchy, with a king and a Parliament of two Houses, the House of Lords consisting of about 670 hereditary peers, 24 spiritual peers, 16 Scottish representative peers, a number of Irish representative peers (at present 14; vacancies are no longer filled), and a few life peers who have held high judicial office; and the House of Commons, numbering 615 members, elected by a practically universal suffrage.

Ruler, King George VI; acceded Dec. 11, 1936, on the abdication of his elder brother, Edward VIII. Capital, London. Flag, the Union Jack, consisting of a red cross on a white field (for England), surcharged on a diagonal red cross on a white field (for Ireland), surcharged in turn on a diagonal white cross on a blue field (for Scotland).

Area.—94,278sq.m., of which England (without Monmouthshire) covers 50,328sq.m. (X.)

History.—The year 1937 was marked by two events which, by reason of the deep personal emotions they aroused, made a lasting and unforgettable impression on the national mind: the coronation, and the retirement of Mr. Baldwin. The solemn and religious dedication of the young king and queen—the word 'young' was used by Mr. Baldwin in his coronation message, and we tend to think of them perhaps as younger and less experienced than they are—to the duties of their high office, was followed in all its details, not only by the thousands who lined the streets to witness the procession, but also by the millions all over the country at their own firesides, and indeed by countless millions more all the world over. The use of the microphone made the coronation of King George VI and Queen Elizabeth unique in the long line of British coronations, and far more nationally significant than any of its predecessors. Not only the favoured few, but all the world was with them in the Abbey throughout the noontide hours of May 12.

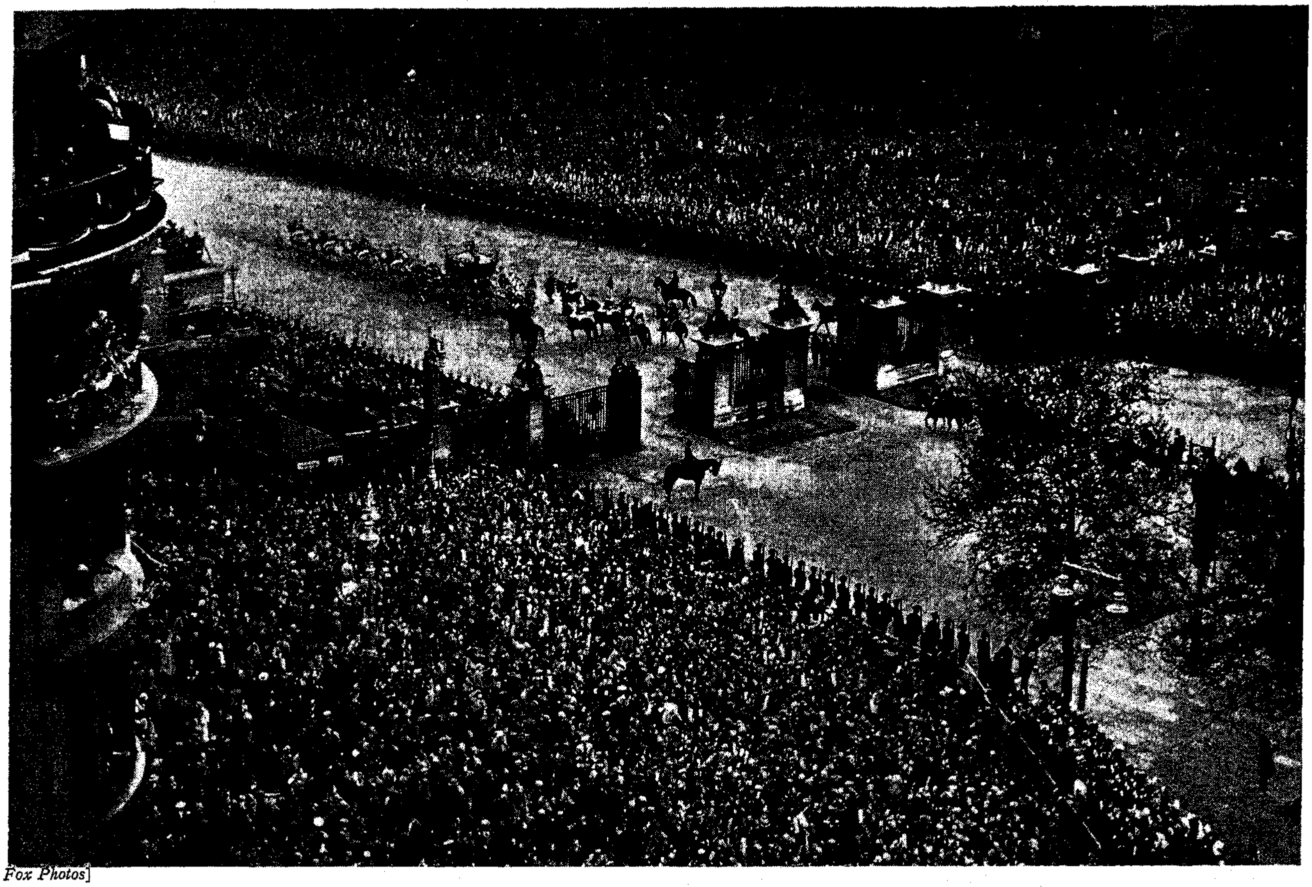
And if the coronation opened a new epoch to which His Majesty's subjects at home and abroad look forward with fundamental confidence, but also with far more anxieties than one could wish for, so did the retirement of Mr. Baldwin, 16 days later, bring to a close a career of public service which, in a peculiar degree, won admiration and gratitude extending far beyond the wide circle of his political supporters. Almost unknown to the public until four years after the end of the War, Mr. Baldwin had, between 1923 and 1937, been three times prime minister, and one of the two principal architects of the National government which was formed to meet the financial crisis of 1931. Moreover, for 12 of these 14 years he had been the leader of the largest party in the House of Commons. Nineteen thirty-seven also saw the deaths of Mr. Ramsay MacDonald, whose premierships had alternated with those of Mr. Baldwin during this period, and of Sir Austen Chamberlain and Mr. Snowden, two others of the ten statesmen who formed the cabinet of the first National government.

The accession to the premiership of Mr. Neville Chamberlain had for some time been a foregone conclusion, and was generally welcomed, in spite of the effort of some Opposition journals to suggest that he would prove less friendly to social reform than his predecessor. The prize that has fallen to his lot had been very narrowly missed by both his father and his elder brother before him.

In the sphere of domestic affairs, the year was marked by businesslike legislative activities, and by a fairly steady though not unbroken rise in industrial and commercial prosperity, for which the enormous rearmament programme of the government was partly, though only partly, responsible.

Of foreign relations and the prospects of peace, it is impossible to write with the same confidence and conclusiveness. The major problems waiting for solution at the beginning of the year were still unsolved at the end of it. The year's events in this department are such as cannot yet be seen in their true perspective. A further interval of time must elapse before the historian will be in a position to decide whether the average gradient of 1937 was upwards towards a peace worthy of the name or downwards towards disaster.

The course of events abroad, and the part the British government has sought to play in connexion with them, was watched with strained attention, of which evidence is to be found in the numerous debates on foreign affairs in the House of Commons. Perhaps these debates were too numerous. They compelled the foreign secretary and the prime minister to make guarded statements of policy at times when their work might have been eased had they been free to make no statement at all, and, owing to the supposed requirements of party politics, such debates suggest to foreign observers a degree of national disunity of opinion which did not in fact exist. None the less, they must be accepted as a manifestation of democracy, which, as Mr. Baldwin has said, is the most difficult as well as the best form of government.



Fox Photos]

THE CORONATION, MAY 12, 1937. THE ROYAL COACH ENTERING HYDE PARK AT THE MARBLE ARCH, ON THE RETURN TO BUCKINGHAM PALACE

Foreign Relations.—The Spanish civil war, which began in the summer of 1936, continued with unabated fury, and though the Nationalists under Franco, with their Italian and German auxiliaries, made extensive gains, the end was not in sight at the conclusion of 1937. On the southern coast the Nationalists advanced to Malaga and Motril in February, and in April they launched their big offensive on the Basque provinces of the north, which formed a detached group acknowledging the authority of the Valencia government. Bilbao fell in June, Santander in August, and Gijon in September, and all these northern provinces became part of General Franco's domain. Around Madrid the fighting was destructive but inconclusive. In the last weeks of the year the government forces made a successful assault upon the salient of Teruel, the nearest point to Valencia held by the Nationalists, but at the end of the year it was not clear whether they would be able to hold what they had gained.

The consistent aim of the British Government, summarized as 'non-intervention', was achieved in so far as the Spanish conflict did not degenerate into a general European war, and seemed less likely to do so at the end of the year than on some earlier occasions. It was not achieved in so far as its aim was to secure the withdrawal of the non-Spanish volunteers fighting with the thinly veiled encouragement of their respective governments on either side. The British government was the only government of the Great European Powers which could claim a genuine neutrality of attitude towards the conflicting Spanish parties, but its carefully balanced programme of withdrawal, laid before the Governments concerned at a conference in July, failed to give satisfaction. In March, the London Non-Intervention Committee succeeded in establishing a scheme of supervision by land and sea which for a time prevented the arrival of further volunteers; but in June the bombing of a German battleship by government aircraft, followed by the alleged firing of torpedoes at a German cruiser, led to the breakdown of this scheme by the withdrawal of Germany and Italy. In August there was an outbreak of attacks on the shipping of various nationalities by unidentified submarines in all parts of the Mediterranean. This was fairly promptly suppressed by the Nyon Agreement of Great Britain and France, subsequently joined by Italy, allotting zones of control to the several Mediterranean fleets.

In the latter half of the year the Spanish civil war was thrown into the background by the formidable attack launched by Japan upon China. The pretexts for this war in the Far East were two comparatively trivial affrays, in which a few Japanese soldiers lost their lives, and there can be no doubt that the military coterie which rules Japan welcomed the opportunity of increasing their hold on the mainland of Asia. The Japanese launched their attack upon Shanghai in August with forces which at first proved inadequate in view of the stubborn and skilful Chinese resistance, but by the end of October the country round Shanghai was in Japanese hands, and before the end of the year their forces had moved up the river Yang-tse Kiang and occupied Nanking, the Chinese government having shifted their capital to Chungking, several hundred miles up the river. In the north, the Japanese invasion spread over a territory three times as large as the United Kingdom, and including the old capital, Peking.

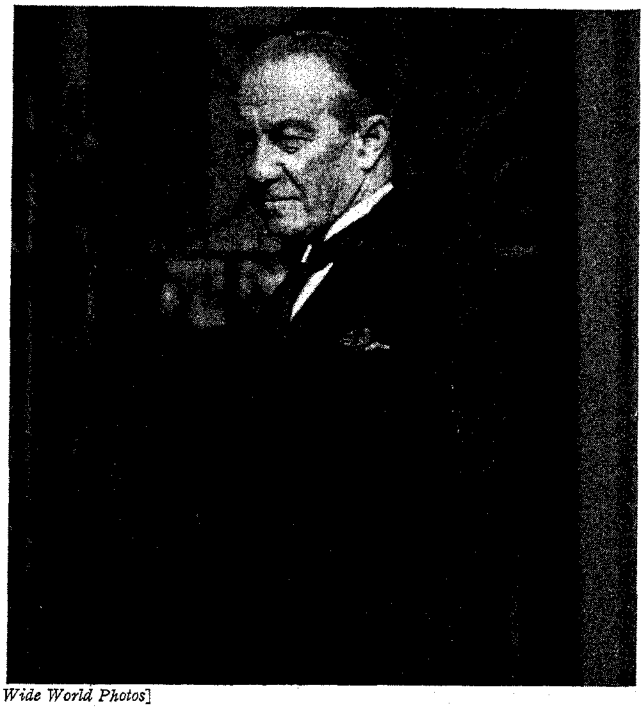
There can be no question that the Japanese, while supported wholeheartedly by Italy and with reservations by Germany, have had a 'bad press' in Great Britain. They have shown a singular inability to make plain to the Anglo-Saxon world the genuine difficulties of their position and their real grievances against China. Moreover, the wholesale destruction of life by the Japanese bombing of Chinese towns outside the area of hostilities provoked a vigorous condemnation of Japanese methods, even among those who realized that such incidents are bound to form an integral part of large-scale warfare under modern conditions. Neutrals have suffered from the military activities of both belligerents. In August, Japanese aeroplanes bombed a car containing the British ambassador to China, and in December they attacked with bombs and machine-gun fire a gunboat belonging to the United States. Protests were made after both these and other like incidents, with no result beyond formal apologies. British, and indeed world-wide, diplomacy has proved powerless to deal with the situation. A conference at Brussels of the signatories (including America) of the Nine-Power Pact, which regulated the Far-Eastern position in 1921, broke up without achieving any valuable result (*see* NINE-POWERS CONFERENCE).

No appreciable advance or retrogression has been made in connexion with the problems of Germany's relations with Great Britain and France. Italy and Germany have made carefully staged and spectacular advances towards amity on an 'ideological front' in opposition to Communist Russia and her French ally. Germany continues to profess willingness to make a bilateral agreement with France, whereas France is unwilling to enter upon discussions unless they include the safeguarding of her allies in central Europe. With Soviet Russia, Germany will have no terms but those of frank hostility. The German demand for the restoration of her forfeited colonies has been widely and sympathetically discussed in the British Press, but such discussions have served only to bring out the difficulties in the way of any plan of restoration, and the determination of most British schools of thought that, if there is to be a reassortment of territories which changed hands at or after the Treaty of Versailles, Great Britain must not be the only country called upon to make sacrifices in the interests of European appeasement. The visit of Lord Halifax, a distinguished member of the British government, to Herr Hitler in November was a friendly gesture accepted in the spirit in which it was offered, but it is impossible to say whether it achieved any permanently valuable result.

The Empire.—The great event of the year in the history of the British Empire has been the inauguration, in April, of provincial autonomy in the 11 provinces of British India under the terms of the Government of India Act of 1935. Of the 30 million electors, though the majority of them are illiterate, 54 per cent. went to the polls, a result which compares favourably with any local government election in England. The Congress Party secured a majority in six provinces, and for some time it looked as though the extremist leaders of the party would persuade their provincial representatives to refuse to assume office in the provincial governments except on terms which the governors could not grant. Not for the first time, however, the immense prestige of Mr. Gandhi was thrown on to the side of moderation, and by July ministries representing the elected majorities had taken office in every province. The prospects of federation between British India and the Indian States have become more remote. However, the new Federal Court was established in the course of the autumn.

Palestine, though not officially within the British Empire, is none the less a British responsibility. When the British government undertook, after the War, the supervision of Palestine under a mandate with the purpose of establishing there a National Home for the Jews, it was optimistically assumed that the incoming Jews and the native Arabs would amicably combine and form a single nationality, which could ultimately be entrusted with the government of the country. It seems doubtful, in retrospect, whether this result could have been secured even under the most favourable circumstances. But conditions ever since the granting of the mandate had been consistently unfavourable, and Palestine had become the home of two rival nationalisms, neither of which was prepared to tolerate the other. The last and worst of several epochs of 'unrest' led to the sending out of Lord Peel's Commission, which in June issued a report recommending the partitioning of the country. The Jews were to receive, ultimately in full sovereignty, a coastal strip, together with Galilee; the rest was to be joined with the existing Arab kingdom of Trans-jordan, with the exception of Jerusalem and a corridor to the coast, which was to remain permanently under a British mandate. The British government accepted in general terms the proposals of the report, and secured the assent of the League of Nations to the further proceedings which the policy thus described involves.

Home Affairs.—In domestic affairs the outstanding and characteristic activity of the year was the rearmament programme, with its many and ramifying corollaries—increased taxation and diminished unemployment being the most obvious. During the year, £278 millions was spent on defence, of which £80 millions was to be met from the loan raised early in the year. In his last budget Mr. Chamberlain raised the income-tax by threepence to five shillings, and proposed a special and temporary tax on the growth of profits as a National Defence Contribution. The details of this scheme were condemned as unfair and unworkable by the leaders of the world of business, and after Mr. Chamberlain had become prime minister,



Wide World Photos]

MR. (NOW LORD) BALDWIN, LEAVING DOWNING STREET FOR BUCKINGHAM PALACE TO TENDER HIS RESIGNATION, MAY 1937 his successor as chancellor, Sir John Simon, agreed to impose instead a general tax on all profits. An Air Raid Precautions Bill became law, enacting measures for which responsibility is divided between the Home Office and the local authorities. In the course of the year many thousands of civilians of both sexes all over the country received their first lessons in the handling of gas masks. Mr. Hore-Belisha, promoted from the ministry of transport to the War Office, undertook a widely and judiciously advertised campaign for attracting recruits to the regular and territorial armies by improved conditions of service, and the recruiting for both branches reached higher figures than had been seen since the War.

The general legislation of the year, voluminous and useful but not spectacular, calls for little comment here. Most of it—the long-promised Factories Act, for example—embodied policies on which there was general agreement, and little scope was offered for ' party politics ' of the old-fashioned kind. Indeed, the various sections of the Opposition appeared to disagree more heartily with one another than with the government. A bill regularizing the anomalous salaries of members of the government was followed by the adoption of proposals raising the salaries of all M.P.s from £400 to £600 a year. The enactment of the Matrimonial Causes Bill, enlarging the grounds of divorce, was a personal triumph for Mr. Herbert, and an encouragement to private members in general to make the best use of the legislative facilities available for them. Indeed, more private members' bills reach the Statute Book year by year than the public in general realizes, though few of them deal with such thorny subjects as divorce.

Official recognition of the fact that the population is threatened with a reduction in numbers which may well become catastrophic in the course of a very few generations was afforded by the Population Statistics Bill, enabling the registrars of births and deaths to obtain more detailed information than heretofore.

Scotland received a new and active-minded secretary of State in Dr. Walter Elliot, who is devoting himself to problems of slum clearance, in which Scotland still lags far behind England. Northern Ireland observed with equanimity the new constitution promulgated by Mr. de Valera, which defined the territory of the Irish Free State as embracing the whole of ' Eire ' and its adjacent islands.

For wage-earners in general the year was one of solid progress. The total increase in wage rates amounted to £723,000 a week, a sum nearly equalling the combined increases of the three previous years since the turn of the tide after the great slump. Prices have also risen, but they have barely reached the price level of 1929, whereas wages are substantially in excess of the wages of that year. Rising prosperity is apt to be attended and impeded by widespread strikes, but 1937 has been remarkably free from such manifestations, which is evidence both of better feeling between employers and employed than prevailed in the years between the War and the General Strike, and also of the existence of more efficient machinery for the adjustment of wages to changing conditions. An exception to the general amity of capital and labour was the ill-advised London bus strike, which covered the period of the coronation. The most notable industrial feature of the year was the rapid extension, without the need of legislative encouragement, of the system of holidays with full pay. It is estimated that nearly five million wage-earners, more than a third of the number of wage-earners insured against unemployment, now enjoy this privilege. An announcement, made in the first week of 1938, may perhaps be brought within this survey, since it may mark the beginnings of extensive experiments. A large Lancashire firm have undertaken to pay to their employees a weekly bonus of five shillings for each child in excess of three children in the family. (D. C. So.)

Population (census 1931).—44,937,444; of which England (without Monmouthshire) has 37,219,842; density 477 per sq. m. Eighty per cent. of the population in England and Wales are resident in urban areas. Death-rate (1936), 12·1 per thousand living; birth-rate, 14·8 per

Chas. E. Brown]

A VIEW OF THE BRITISH FLEET AT SPITHEAD DURING THE CORONATION REVIEW 1937 thousand living; infantile death-rate (under one year), 59 per thousand born alive.

Religion.—In England, the Protestant Episcopal Church is established by law, and is governed by two archbishops and 41 bishops, with (1936) 2,382,857 Easter communicants. The largest Nonconformist bodies are the Methodists, Congregationalists, and Baptists (*qq.v.*); there are some 2,350,000 Roman Catholics, and about 300,000 Jews. *See* also SCOTLAND; WALES; IRELAND, NORTHERN.

Language.—English; but in Wales and Scotland (*qq.v.*) Welsh and Gaelic respectively are still the only languages of a small proportion of the population.

Educational System.—Education, both elementary and secondary, is administered by the local authorities under the supervision of the ministry of education (or, in Scotland, the Scottish Education Department). In 1936 there were 20,880 elementary, special, and nursery schools in England and Wales, of which 10,180 were 'public' (wholly maintained by local education authorities) and 10,700 'voluntary' (partly so maintained, but managed by religious or like organizations), with a total average daily attendance of 4,748,453. In Scotland there were 2,900 primary schools, with an average daily attendance of 580,233. Elementary teachers in England and Wales numbered 169,591; in Scotland, 19,461.

'Efficient' secondary schools in England and Wales in 1935–36 numbered 2,116 (of which 1,389 were aided by Government grants), with 559,248 pupils and 24,003 teachers; in Scotland 251 post-primary schools had 159,591 scholars and 6,764 teachers. The total expenditure on education by local authorities in England and Wales (1935–36) was £21,153,338, for higher and (1936–37) £69,591,538 for elementary schools; in Scotland (higher and elementary, 1936–37) it is estimated at £13,403,097. In 1936 England and Wales had 263 technical and commercial colleges and other similar institutions, with 38,172 full and 1,044,958 part-time students. Scotland had 145,774 students attending 953 centres of various kinds for continuation classes. England has 11 universities (Oxford, Cambridge, London, Durham, Manchester, Birmingham, Liverpool, Leeds, Sheffield, Bristol, and Reading), with in all about 4,450 professors, lecturers, etc., and 39,650 students, and five University colleges at Exeter, Hull, Leicester, Nottingham, and Southampton. The year 1937 was remarkable for a donation of £2 millions to Oxford University for medical research, and later £1 million and a site for a new college for post-graduate social studies and for other purposes, both by Lord Nuffield (*q.v.*); and plans were announced during the year for the reconstitution of Durham University.

Leading Cities.—London, the capital, had a population at the 1931 census of 4,396,821 ('Greater London', or the Metropolitan Police area, having 8,202,818); in 1936 the estimated populations were 4,141,100 and 8,575,700 respectively. The next largest cities in England, with populations as estimated in 1937, are: Birmingham (1,018,800); Liverpool (846,400); Manchester (744,000); Sheffield (518,200); Leeds (489,862). In 1931 there were in England 113 towns with a population exceeding 50,000. *See* also WALES; SCOTLAND; IRELAND, NORTHERN.

Agriculture.—Of the total land area of Great Britain, 21·5 per cent. (a lower proportion than in any other year since the World War) was arable in 1936; 31 per cent. permanent pasture, and 28 per cent. rough grazing land. Land is at present being continually transferred from crops to permanent grass. Some 1,798,000 acres were under wheat, 2,249,000 under oats, 891,000 under barley, and 590,000 under potatoes, the total produce of these crops being respectively 6,759,000 quarters, 12,149,000 quarters, 3,809,000 quarters, and 3,804,000 tons. Fruit-growing occupied 327,718 acres (excluding Northern Ireland). The estimated total value of agricultural output in England and Wales was £208,165,000, and the number of separate holdings (over one acre) 448,481, of which 434,229 were under 300 acres. Milk production was estimated at 1,414 million gallons. Livestock included 7,853,307 cattle, 24,205,423 sheep, 1,012,743 horses, and 4,040,176 pigs. It was announced during 1937 that the government proposed to take measures to restore fertility, so that production might be increased in the event of war, and to raise by one-third the limit of wheat production allowed under the Wheat Act of 1932; and that a Livestock Commission would be set up, a subsidy of £5 millions being paid to producers of fat cattle.

National Resources.—One million forty-four thousand and forty-three tons of sea fish (other than shellfish) were taken in British waters and landed in Britain during 1936, of an estimated value of £15,749,163. The latest statistics show that about 32,000 persons are employed in the fishing industry. The coal output in 1936 was about 228 million tons, of which 50,330,000 tons were exported, 176 million tons being available for home consumption. Attempts to find oil were continued during 1937 in Sussex and elsewhere, but without success. The output of electricity by authorized undertakers in 1936–37 was 20,868 million units, an increase of 13·3 per cent. over the previous year; 16,803,500,000 units were sold to 7,652,000 consumers.

Commerce and Industry.—The following table shows the value of Great Britain's exports and imports for the last complete year (1937). The figures represent thousands of pounds sterling:

	Imports	Exports	Re-exports
Food, Etc, . . .	432,373	38,780	13,181
Raw Materials . .	315,345	64,652	36,914
Manufactured Articles .	274,985	404,839	24,444
Animals, not for food .	3,031	850	628
Parcel Post . . .	3,331	12,473	—
Total . .	£1,029,065	£521,594	£75,167

Imports increased by £181,313, exports by £80,875, and re-exports by £14,751 over the preceding year. Of 1936 imports £332,380,000, or 39·2 per cent., came from within the Empire, and 10·99 per cent. from the United States; of the exports of British produce £216,927,000, or 48·5 per cent., went to countries within the Empire, and 6·27 per cent. to the United States.

The British mercantile fleet in 1937 amounted to 17,436,000 gross tons (26·7 per cent. of the world total). Five hundred and fifty-one new factories employing 25 or more persons were opened during 1936; and 14,381 new companies were registered, with a nominal capital of £164,422,038. The total number of public companies with share capital in England, Wales, and Scotland at the end of 1936 was 14,742, with paid-up capital of £3,993,310,303; of private companies, 130,820, with paid-up capital of £1,741,605,643.

Transport and Communications.—Railway developments in 1937 included the introduction of electric working on the line from London to Portsmouth (95 route miles) and the speeding-up of services between London and Northern England and Scotland, for which new rolling-stock and stream-lined locomotives were built. A 5 per cent. increase in railway rates came into force in October. Road development is proceeding in accordance with the 'Five-Year Plan' announced in 1935, but no new spectacular schemes have come to the fore. Work was begun on a Dartford–Purfleet tunnel under the Thames east of London. In January a committee under Sir Henry Maybury recommended the co-ordination of inland mail and passenger air services, to be based on a central junction in the Manchester–Liverpool area. Imperial Airways Ltd., whose fleet consisted in November of 73 machines in commission or on order, inaugurated an air-mail service to East and South Africa in June, carrying letters at the rate of 1½*d.* per half-ounce. In November 8,424,200 wireless licences were current in Great Britain, and in October it was announced that for the first time broadcasts in foreign languages (Spanish, Portuguese, and Arabic) were to be undertaken. Telephone developments included the laying of the first coaxial cable between London and Birmingham, in which two conductors can carry about 250 simultaneous conversations.

Currency and Exchange.—The unit of currency is the gold sovereign, weighing 123·274 grains eleven-twelfths fine, divided into 20 shillings (a silver coin ·500 fine and weighing 87·27 grains) or 240 pennies; since the World War the ordinary currency, apart from silver and bronze coins, has been Bank of England notes of one pound and 10 shillings, which are legal tender (even by the Bank itself) for any amount. On Oct. 13, 1937, the amount of Bank notes issued was £526,406,625, of which £489,858,849 was in the hands of the public, and £36,547,976 in those of the Bank. In November the fiduciary note issue was temporarily raised (for two months) from £200 millions to £220 millions to meet seasonal demands. The gold reserve of the United Kingdom in 1937 was estimated at 1,531 million pre-war gold dollars. An Exchange Equalization fund of £350 millions operates when necessary by the issue of Treasury bills to prevent undue disturbance in foreign exchange rates, but details of its operations are not made public.

Budget.—The budget of April 1937, excluding self-balancing revenue and expenditure, showed an estimated revenue for 1937–38 of £863,100,000, and an expenditure of £862,848,000, as in the following table:

ESTIMATED REVENUE

	£	£
Property and Income Tax	288,150,000	
Surtax	58,000,000	
Estate and Death Duties	89,000,000	
National Defence Contribution	2,000,000	
Stamps	29,000,000	
Other Inland Revenue Duties	1,500,000	
Total Inland Revenue		467,650,000
Customs	219,850,000	
Excise	113,150,000	
Total Customs and Excise		333,000,000
Motor Vehicle Duties		34,000,000
Crown Lands		1,350,000
Interest on Sundry Loans		4,300,000
Post Office (net receipts)		11,800,000
Miscellaneous		11,000,000
Total Ordinary Revenue		£863,100,000

ESTIMATED EXPENDITURE

	£
Grants for Local and Other Services	181,274,000
Irish Services	15,162,000
National Debt, Interest and Management	224,000,000
National Pensions and Insurance and Unemployment Assistance	182,497,000
Defence	200,650,000
Tax Collection	14,274,000
All Other Services	34,991,000
Margin for Supplementary Estimates	10,000,000
Total Ordinary Expenditure	£862,848,000

Wide World Photos]

THE QUEEN AND QUEEN MARY, WITH PRINCESS ALICE, COUNTESS OF ATHLONE (LEFT) AND THE DUCHESS OF KENT (RIGHT) ON THE OCCASION OF THE TROOPING OF THE COLOUR

Not included in this table are the self-balancing items of £72,238,000 for the Post Office Revenue required to meet its expenditure, and £2,870,000 for the Broadcasting grant obtained from licence fees.

Taxation.—The main sources of the tax revenue of the United Kingdom are customs, excise duties (especially on alcoholic liquors and entertainments), income tax and surtax, estate and legacy duties, motor vehicle duties, and stamp fees. For the proceeds raised from these sources and for any changes in the incidence of taxation, etc., *see* BUDGET.

The National Debt at the end of March 1937 totalled £7,916,526,894 (internal, £6,883,963,804; external, £1,032,563,090), including £897,534,246 due to the United States, of which no repayment has been made since 1932. Against this was to be set £119 millions for Victory Bonds, etc., purchased by the National Debt Commissioners but not yet cancelled.

Banking System.—Great Britain has no State bank. The Bank of England (in Scotland, the Royal Bank of Scotland) operates under Royal charter in close association with the Treasury, and lends money to the State. Commercial and private banking is largely concentrated in the hands of five great joint-stock banks, though numerous smaller institutions also operate. The Bank of England return of Dec. 8, 1937, showed:

ISSUE DEPARTMENT

Notes issued:		Govt. Debt	£11,015,100
In circulation	£492,830,681	Other govt. securities	208,685,237
In Banking Dept.	53,575,934	Other securities	288,836
		Silver coin	10,827
		Fiduciary issue	220,000,000
		Gold coin and bullion	326,406,625
	£546,406,625		£546,406,625

BANKING DEPARTMENT

Capital . .	£14,553,000	Govt. securities	£87,243,165
Rest . .	3,323,949	Other securities:	
Public deposits .	11,741,792	Discounts and advances .	9,640,659
Other deposits:			
Bankers .	106,310,262	Securities .	20,954,876
Other accts. .	36,657,844	Notes . .	53,575,934
		Gold and silver coin . .	1,172,213
	£172,586,847		£172,586,847

During the year the note circulation of the Bank of England for the first time in history passed the £500 million mark. In 1936 the 11 London clearing banks' total clearings were £40,616,574,000, an increase of £3,056,823,000 or 8·1 per cent. over the previous year. On Mar. 31, 1937, £1,378 millions were invested in Post Office and Trustee Savings Banks and in National Savings Certificates—the highest total ever known. The balance due to depositors in the Post Office Savings Bank on Dec. 31, 1936, exceeded £432 millions, in addition to £165 millions invested in government stock; deposits made during the year exceeded £130 millions.

Defence Forces.—The Navy, Army, and Air Force of Great Britain are separately administered, but the cabinet includes a minister for the Co-ordination of Defence, and a Committee of Imperial Defence, representing all three services, overlooks general policy. Parliament has authorized the raising by loan of £400 millions for defence purposes.

Navy.—The British Navy is governed by the Board of Admiralty, headed by the First Lord of the Admiralty (a cabinet minister), and including also four Sea Lords, a deputy and an assistant chief of naval staff, a Civil Lord, a parliamentary secretary and a permanent secretary. The authorized personnel (officers and men) is 112,000. Vessels in service, building, or projected in 1937 included 20 battleships and battle cruisers (15 completed), 15 heavy cruisers, 62 other cruisers, 202 destroyers and 70 submarines; the shipbuilding programme for 1937–38 includes 3 battleships, 2 aircraft carriers, 5 large and 2 small cruisers, 16 destroyers, 7 submarines, and 43 other craft. Of the five capital ships now under construction, two will be ready in 1939 and three in 1941. During 1937 some 32 new ships (including six cruisers, nine destroyers, and three submarines) were completed. The budget estimate for the Navy for 1937–38 totalled £78,065,000, with additional expenditure otherwise provided for of £27 millions.

Army.—The British Army is enlisted throughout on a voluntary basis. It is administered by the Army Council, presided over by the Secretary of State for War (a member of the cabinet) and including eight other members. The Regular Army establishment (excluding India) provided for in the 1937–38 estimates was 168,900 officers and men. The Territorial Army, the main auxiliary military force, serving in time of peace at home only, had on Dec. 1 an establishment of 203,000, and an actual strength of 158,948. It is being rapidly reconstructed, largely with a view to anti-aircraft defence. The Army Reserve on Jan. 1, 1937, numbered 118,400 effectives. The estimated expenditure for army purposes in the 1937–38 budget was £63,120,000, an increase of £7,500,000 over the estimates of the previous year; funds to be derived from loans, etc., raised the net total to be spent to £82,174,000. During the year important changes in army conditions were announced, designed to promote recruiting, including the modernization of barracks, abolition of irksome pay deductions, changes in the age limits and physical requirements of recruits, etc. Plans that are being carried forward include the expansion of the Tank Corps, and of anti-aircraft units, the formation of two new infantry battalions, and the almost complete mechanization of the cavalry. At the beginning of Dec. 1937 important changes in the high command and General Staff were announced, older officers retiring to make way for their juniors; and it was stated, by the Secretary of State for War, Mr. Hore-Belisha—who had replaced Mr. Duff Cooper in May—that in future, not seniority, but 'merit, character, and ability shall be the main entitlement to promotion and reward'.

Air Force.—The Royal Air Force, a voluntarily enlisted body, is governed by the Air Council, consisting of the Secretary of State for Air and six other members. In April 1937 it consisted of 100 squadrons stationed at home, 26 serving overseas, and 20 serving with the Fleet Air Arm (the control of which latter, it was announced in July, is being transferred to the Admiralty). The strength of the Air Force in April, including auxiliaries, was 55,850; the establishment at present provided for is 70,000. Training takes place at 13 civil and 11 service flying schools. Existing plans provide for the organization of a Metropolitan Air Force with a first-line strength of 1,750 aircraft organized in 124 (including 20 auxiliary) squadrons. A new Royal Air Force Volunteer Reserve for the training of civilians was formed during the year. The Budget estimates for 1937–38 envisaged an Air Force expenditure of £56,500,000, to be increased by expenditure on loan account to £82,500,000. A number of new aerodromes are under construction, principally on the eastern side of Great Britain, and during the year the output of aeroplanes and of aeroplane construction machinery was greatly accelerated.

Police.—The police of Great Britain are under the control of the county or borough councils, except in the London area (outside the 'City'), which is policed by a force (the Metropolitan Police) under the direct control of the Home Office. The efficiency of the provincial forces is secured by a system of government inspection and grants in aid. In 1936 the total authorized strength of the police forces in Great Britain was 65,845 (England and Wales 59,238; Scotland 6,607), including 207 women (175 and 32 respectively). Net expenditure for police purposes in England and Wales was £21,480,745; in Scotland £2,397,246. During 1937 much progress was made with the provision throughout the country of 'police boxes' at convenient points which may be used by the public to get into instant touch with the police by telephone and, in London, a method of telephoning direct to Scotland Yard in cases of emergency was introduced. (X.)

GREECE (*Kingdom of Hellas*), a monarchy of S.E. Europe, bounded W. by the Adriatic, N. by Albania, Yugoslavia, and Bulgaria, E. by Turkey and the Aegean. Ruler, King George II. Flag, narrow blue and white stripes.

Area and Population.—The area is about 50,270sq.m., of which 41,652sq.m. are mainland and 8,618sq.m. islands; population (Dec. 1935): 6,839,000. In 1928 the population was 6,204,684, of whom 5,759,523 were Greek-speaking, 191,254 speaking Turkish, 81,984 'Macedonian,' 63,200 Spanish. 5,961,529 belonged to the Greek Orthodox Church, which is the religion of the State; 126,017 were Moslems. Elementary education is compulsory. The higher educational system is well developed.

Chief towns: Athens, pop. (1928) 392,781; Salonica, 236,524; Patras, 61,278; Kavalla, 49,980.

Political History.—In 1935 King George had been restored to the throne. General elections held in Jan. 1936 brought about a deadlock. On March 15 M. Demerdjis formed a government; but on April 13 he died suddenly, and General Metaxas, deputy prime minister and minister of war, took his place. Parliament was prorogued, but a political amnesty was voted. There was, however, much unrest, due largely to the Communists, who had held the balance after the elections. A general strike was called for Aug. 5. General Metaxas proclaimed martial law, suspended articles of the constitution guaranteeing the liberty of the subject, and dissolved the chamber. Since that date the press has been so strictly controlled that little news from Greece has penetrated abroad. General Metaxas has embarked on a programme said to consist of social reform, the development of industry, and the reorganization of defence.

In foreign affairs the chief note during 1937 was one of warm friendship for Turkey. The two premiers exchanged visits and messages of the utmost cordiality.

Finance, Trade, and Communications.—The monetary unit is the drachma, nominally equal to 1·298 gold cents; this had sunk by March 1937 to 40·7 per cent. of its nominal value. Greece has a heavy public debt, contracted both before and after the War. In 1936 the internal debt amounted to 12,346·9 million dr. and the foreign debt to 35,016·8 million dr. The combined services amounted to 3,004·6 million dr. interest and 68·5 million dr. amortization. For some years Greece has been in default on her foreign debt. In 1936 she agreed to pay 40 per cent. of the interest due, but the Council of Bondholders expressed dissatisfaction. The balance of trade was heavily passive (1935, 10,681 million dr. imports, 7,101 million dr. exports); but there are large invisible imports. The chief trade, both for imports and exports, is with Germany and Great Britain. Industry has, however, developed rapidly. The index of industrial activity for 1936 was 151 (av. 1925–29, 100). The budget for 1936–37 showed estimated receipts of 12,725·4 million dr. and expenditure of 13,285·6 million dr.

Defence.—Military service is compulsory and universal. The budgetary effectives of the army in 1936 numbered 5,187 officers and warrant officers and 52,680 other ranks (average). The navy consists of 1 battleship, 2 cruisers, 21 destroyers and torpedo boats, and 6 submarines. The navy is at present being re-equipped, largely from British sources, while in Jan. 1937 a contract was signed with Germany for a loan of 2,500 million dr. for war material.

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GREENLAND, the world's largest island (about 840,000sq.m., of which about 35,000 are ice-free), in the Arctic Ocean, N.W. of Iceland, and a Danish possession; capital, Godthaab. Population (1930), 16,700, of whom 400 are Danes. The trade, which is a government monopoly, is almost entirely with Denmark. On April 8, 1937, Denmark took formal control of Thule, the most northerly inhabited place in the world, which since 1913 had been a kind of small independent commune. During the year it was announced that the pack-ice-free harbour of Færingehavn, on the south-west coast, would be open for general navigation until Oct. 1941, and many fishing vessels have taken advantage of this new facility. Exploration in the interior continues; new settlements are being made on the north-west coast; and the new openings for Greenland in transatlantic aviation and the dissemination of meteorological information are making important vast territory hitherto regarded as practically valueless.

GREENOUGH, ROBERT BATTEY, American surgeon; born at Cambridge, Mass., Nov. 9, 1871; died in Boston, Mass., Feb. 16, 1937. He graduated from the Harvard medical school in 1896. From 1909 to 1932 he served as assistant professor of surgery at that institution, and from 1917 to 1929 was director of the Harvard Cancer Commission. He was also a consulting surgeon at the Massachusetts General Hospital and the Collis P. Huntington Memorial Hospital, and chairman from 1929 to 1931 of the board of directors of the Society for the Control of Cancer. He was president of the American College of Surgeons during 1934–35. Dr. Greenough's work as a cancer specialist earned him a national reputation.

GRENADA: *see* Windward Islands.

GRESFORD COLLIERY. On Sept. 22, 1934, during the night shift at Gresford Colliery, near Wrexham, in Wales, an explosion, followed by a fire, occurred, resulting in the deaths of 265 of the 400 miners who were working in the pit at the time. A Commission of Inquiry was appointed, consisting of the chief inspector of mines, Sir Henry Walker; Mr. John Brass, a colliery director and mining engineer; and the president of the Miners' Federation, Mr. Joseph Jones. On Feb. 5, 1937, the members of the Commission each issued a separate report, the chairman finding that the explosion was finally due to defective ventilation, that the law had been broken by both workmen and officials, and that information had been withheld from the Court of Inquiry, while Mr. Jones found that numerous breaches of the Coal Mines Regulation Act had occurred over a long period, and that the evidence had revealed 'glaring instances of indiscipline and complete demoralization' among the mine officials. On Feb. 28 a debate on the report took place in the House of Commons, and although the minister of mines then stated that he did not propose to take disciplinary action against the mines inspectors responsible for the area, the Attorney-General stated that he was considering legal proceedings. A Labour motion expressing Parliament's concern at the conditions revealed by the explosion, and calling for the adoption of more effective safety measures in the coal industry, was accepted by the government and passed; and on April 20 began the hearing of summonses issued against the owners and officials of the colliery, in respect of various breaches of mines regulations committed before the disaster. A number of the summonses were withdrawn during the progress of the case, and on April 27 the matter ended with the imposition on the owners and a former manager of the pit of fines amounting to £140 and £350 costs.

GREYHOUND RACING. Since London's first greyhound race meeting was held at the White City, on June 20, 1927, and the inauguration in the following year of the National Greyhound Racing Club, which acts as the unofficial Jockey Club of the sport in England, the popularity of this form of racing has increased enormously, 28,000 owners and over 60,000 greyhounds having been registered by the club. In 1937, approximately 30 million people attended greyhound racing in England. The most famous greyhound was Mick the Miller, bred by an Irish priest. The first totalizator on a greyhound race-course in England appeared in 1931, but later its use was declared illegal. However, the Betting and Lotteries Act of 1934 legalized totalizators on greyhound tracks and at the same time limited race days to 104 in a year. Distances of races vary from 300 to 1,000yds.; the average speed of a greyhound is 37m. per hour. For the richest race, the 'White City', the prize money amounts to £3,500. In England runners in each race number six (flat races) and five (hurdle races), but in America eight-dog races are general. Attempts to popularize the sport in India, Spain, Italy, Malta, Portugal, and France have met with indifferent success.

GUADELOUPE, a French colony in the West Indies, including Guadeloupe itself and several minor islands; language, French; capital, Basse-Terre. Governor, Félix Éboué. The area is 688sq.m. The population (1936 census) was 302,659. The chief cities are: Basse-Terre (9,268), Pointe-a-Pitre (30,465), and Le Moule (17,107). The colony is administered by a governor and an elected general council, and is represented in the French parliament. In 1937, the French agricultural moratorium and labour arbitration laws of 1936 were extended by decree to Guadeloupe. Regular shipping service connects the colony with France and with the United States. Imports in 1936 aggregated 125,459,000 francs in value, exports 170,944,000 francs. The chief imports are foodstuffs, textiles, beverages, and timber, with 65 per cent. supplied by France. Its chief exports, almost entirely to France, are bananas (49,672,400 francs value in 1935) and rum (33,603,300 francs value in 1935), sugar, and coffee. The island produces annually 35,000 metric tons of cane sugar, 10 million litres of rum, and 26,000 tons of bananas. There are 18 sugar mills and 94 rum distilleries. The French franc is legal tender. There are over a hundred schools, including secondary and professional, with 10,000 pupils.

GUAM, a possession of the United States of America, and the largest and most populous island of the Marianas, lies at the southern end of that group, approximately 1,500 miles east from Manila; area, about 225sq.m.; population, on July 1, 1937, 22,132, including 20,662 natives, called Chamorros. The capital and only city is Agana. Guam is under the jurisdiction of the United States Navy Department. The people are regarded as wards of the government. Copra is the only export of importance; 5,201,968lb. were exported during the fiscal year 1937. The community is essentially an agricultural one.

GUATEMALA, a Central American republic; capital, Guatemala City; President, Jorge Ubico. Guatemala (48,290sq.m.) had a population of 2,373,083 (1935 census). The leading cities are Guatemala City (116,000), Quezaltenango (35,000), Totonicapan (30,000), and Coban (27,000). The official language is Spanish. On Feb. 15, 1937, President Ubico began his second six-year term of office. In conformity with his famous 'Law of Probity', which requires all office holders to file statements of personal assets upon entering and leaving office, he took the occasion to make public his own and his wife's personal accounts. Chaotic conditions in the world coffee market, accentuated by the Brazilian developments of Nov. 1937, caused considerable excitement in Guatemala late in 1936. In 1936, total imports were 11,511,947 quetzales, exports 15,106,264 quetzales, with the United States leading. Guatemala has 850m. of railroads, 3,000m. of highways. Steamship service and airways provide external communication. Coffee (annual production approximately 130,000,000lb.) is the chief product. Bananas, cabinet wood, and precious metals are also important, with some manufacturing for domestic consumption. The monetary unit is the quetzal. Seven banks have total assets of 29,144,155.86 quetzales. The 1937 budget was balanced at 9,225,000. Marked advances in education have been made in recent years. The number of schools increased from 2,219 in 1935 to 2,476 in 1936, with an added enrolment of over 15,000. The 1937 budget allotted £246,000 to education, making the fifth successive year of continued increase. Guatemala has compulsory military service, and maintains a standing army of 7,000.

GUERNICA, a small town in the province of Vizcaya, Spain, of about 7,000 inhabitants, at one time the capital and 'holy city' of the Basque people. It became unhappily famous in April 1937 in consequence of its savage destruction on the 27th of that month by aircraft attached to Gen. Franco's insurgent troops. The town was bombarded for 3¼hrs. by a fleet of aeroplanes of German type, and was almost completely destroyed by fire, save for the historic oak under which the Spanish kings formerly swore to uphold the democratic rights of the Basques, and the Casa de Juntas, where the Basque parliament once sat, and the archives of the race were preserved. The insurgent leaders, however, denied that the destruction of the town was their work, or that they had any part in the raid, suggesting that Guernica had been bombed and fired by the Basques themselves in an endeavour to excite indignation against the insurgents. The town was occupied by insurgent forces on April 29. On May 3, the insurgents admitted that a few of their bombs might have fallen on Guernica, but still maintained that the main work of destruction was not theirs; but world opinion remained unconvinced by these and further disclaimers. The Spanish government in June gave the number of casualties in Guernica as 1,654 dead and 889 wounded.

GUEST, FREDERICK EDWARD, P.C., C.B.E., D.S.O., British soldier and politician; born June 14, 1875, the third son of the first Baron Wimborne; died at Sunbury-on-Thames, April 28, 1937. He saw military service on the White Nile, 1900, in the South African War, and in the World War, being awarded the D.S.O. in 1917. Early in his political career he acted as private secretary to his cousin, Mr. Winston Churchill. After some unsuccessful attempts to enter Parliament, he sat as Liberal M.P. for East Dorset, 1911–22, Stroud, 1923–24, and North Bristol, 1924–29; and in 1931 he was elected as a Conservative for the Drake Division of Plymouth. He was Secretary of State for Air from 1921 to 1922. In 1905 Captain Guest married Amy Phipps, an American lady, and they had two sons and a daughter.

GUIANA: *see* BRITISH GUIANA; FRENCH GUIANA; SURINAM.

GUINEA: *see* FRENCH W. AFRICA AND THE SAHARA; PORTUGUESE GUINEA.

GUJARAT STATES. This is a group of small Indian States, now in charge of an agent to the governor-general, who is also resident for Baroda. Area 7,472sq.m.; population 1,272,208. The largest of the group is Rajpipla (ruler, Maharana Sir V. S. Chhatrasinhji, with a salute of 13 guns); but there are 10 other chiefs entitled to salutes, and about 70 others of lower dignity.

GWALIOR. The largest State in Central India, with an area of 26,367sq.m. and a population of 3,523,070, of whom 93 per cent. are Hindus. The ruler (with a salute of 21 guns) is H.H. Maharaja George Jiwaji Rao Scindia, who celebrated his majority in 1937; and there are a number of guaranteed feudatories. The capital is Lashkar (population, 78,680) with its famous fort, and the only other town of any size is Ujjain (53,779). Western Hindi and Rajasthani are the languages; and about 7 per cent. of the male and less than 1 per cent. of the female inhabitants are literate. Much of the northern part of the State is rocky jungle, but the southern tract (Malwa) is rich agricultural land, and used to be famous for the high opium content, as well as the beauty of the variegated colours, of its poppy fields. (ME.)

GYNAECOLOGY AND OBSTETRICS. The year 1937 is not memorable for any great discovery in the art of midwifery or of gynaecology. It has been rather a year of steady progress along lines already suggested by recent research.

In clinical obstetrics the most important work done has been the extended trial given to a new method of treatment of certain forms of puerperal fever. This dangerous disease, which is responsible every year in England and Wales alone for the death of about 1,200 women in childbed, may be caused by a number of different micro-organisms. The most common and most fatal type is due to infection by a particular brand of streptococcus, known as *Streptococcus pyogenes* (Group A haemolytic streptococcus), which is also the infective agent in many other septic conditions such as septic sore throat, acute middle ear disease, erysipelas, and cellulitis. The incidence of this infection in puerperal women has been carefully investigated by Leonard Colebrook and his fellow-workers, chief among whom is his sister, Miss Dora Colebrook, and they have made practical suggestions as to the prevention during the conduct of labour of infection with this organism, which they have shown comes as a rule from an ' attendant contact'.

Acting on the results obtained in animal experiments by the German worker Domagk in 1935, they introduced treatment by prontosil, a drug containing a sulphonamide group, for puerperal sepsis due to infection by *Str. pyogenes.* This treatment was tried at Queen Charlotte's Hospital in London in a series of 200 cases during 1936, with the happy result that the mortality, which over a series of years had averaged 22·8 per cent., dropped to 5·5 per cent. Last year this method of treatment has had a wide and extended trial, and the results reported go to show that a definite advance has been made in combating a disease which has been hitherto a bugbear to the obstetrician. Prontosil and sulphanilamide seem to be specifically lethal to *Str. pyogenes*, and can be used, not only as a remedy, but as a prophylactic, where infection is to be feared.

The risks of maternity are no longer merely a medical problem. Maternal mortality has become a matter of public interest, and its prevention is now not only a social but, what is to be deprecated, a political question. One line of attack has been an endeavour to raise the standard of skill of the attendants on the woman in labour. The General Medical Council has already required a longer period of training for medical students. The Central Midwives Board has extended the course for practising midwives from one year to two, and has introduced into it a number of public health subjects. With the same object in view, a Midwives Bill for England was passed in 1936. The Act imposes on local authorities the duty of preparing and putting into force schemes for the provision in their areas of an adequate service of fully-trained midwives, and aims at eliminating from midwifery practice within a short term of years all except fully-trained midwives. A similar act for Scotland goes further, and will make provision for a complete maternity service, including medical attendance for the mother before, during, and after confinement. Already in 1937 many very satisfactory schemes, on paper at least, have been formulated and put into force, but it is evident that time is required for the provisions of the Acts to become fully operative and that still more time must elapse before we can judge of their success in solving the problem.

Attention has been called to the increased risks run in childbirth by women who are undernourished, and a notable discussion on nutrition in pregnancy at the British Medical Association's meeting in Belfast in July 1937 emphasized the importance to the expectant mother of a diet adequate both in quantity and in quality.

For years past much work has been done in investigating the physiological problems of menstruation. It has long been known that this function depends on the presence in the menstruating woman's body of active ovarian substance. It has been shown that the changes which occur in the uterus during the period extending from one menstruation to the next—the menstrual cycle—are due to the successive action of two activating substances (hormones) produced in the ovary—the first, oestrin, during the ripening and shedding of an ovum, and the second, progestin, secreted by the corpus luteum, which is formed after the shedding of the ovum about the middle of the menstrual cycle. The onset of menstruation is most probably caused by atrophy of the corpus luteum and consequent withdrawal of progestin. But it has been further demonstrated that the ripening of the ovum, its discharge, and the formation of the corpus luteum, are in turn due to stimulation of the ovary by hormones produced in the anterior part of the pituitary body, a small gland situated at the base of the brain. Substances to all intents identical with these pituitary hormones are elaborated in quantity by the placenta, and are excreted in the urine of pregnant women, whence they can be separated.

Menstrual disorders bulk large in gynaecological practice, and the possibility of using in their treatment these hormones, which are now commercial products, has been attracting much attention. Many reports have been published, but it cannot be said that there is as yet any general agreement as to their value or even as to the dosage to be adopted. The solutions used have to be standardized by animal experiment. It will be a great step forward when these substances, which are known to belong to the sterol group, can be obtained pure in crystalline form, as dosage can then be calculated by weight.

The first annual report of the League of Nations Health Organization on the results of radiotherapy in cancer of the uterine cervix has just appeared, and deals with the results of treatment in 1930 and previously. It emphasizes the importance of early diagnosis in this disease. Over 50 per cent. of first-stage cases are free from recurrence at the end of five years, but the more advanced the growth when treatment was begun the more steeply the mortality rises in spite of treatment. (*See* CHEMOTHERAPY and PUBLIC HEALTH SERVICES.) (R. J. J.)

H

HADLEY, HENRY KIMBALL, American composer and conductor; born in Somerville, Mass., Dec. 20, 1871; died in New York, Sept. 6, 1937. A biographical notice may be found in the *Ency. Brit.*, vol. 11, p. 65. While insisting upon the performance of American compositions as part of his programmes, he was opposed to all efforts to create a special American school, and his own compositions are not typically American. His death followed a long illness.

HADOW, SIR (WILLIAM) HENRY, C.B.E., British scholar and musician; born at Ebrington, Glos., Dec. 27, 1859; died in London, April 9, 1937. For a biographical notice, *see Ency. Brit.*, vol. 11, p. 65. Sir Henry retired from the vice-chancellorship of Sheffield University in 1930. His later publications included: *Church Music*, 1926; *Collected Essays*, 1928; *English Music*, 1931; and *Richard Wagner* in the Home University Library. In 1930 Sir Henry married Edith Troutbeck, who died on March 15, 1937.

HAFID, MULAI, ex-Sultan of Morocco, died at Enghien-les-Bains, France, on April 4, 1937. For an account of his reign, *see Ency. Brit.*, vol. 15, p. 818. After his abdication in favour of his brother, Mulai Yusef, Mulai Hafid lived in Spain and France.

HÄFTEN, HANS VON, German war historian; born 1870; died June 9, 1937. During the World War he won considerable success as a director of propaganda in neutral countries. From 1931 to 1934 he was president of the history department of the Reich archives, and supervised the issue of eleven volumes of *Der Weltkrieg 1914 bis 1918.*

HAITI, a West Indian republic occupying the western third of Hispaniola; language, French; capital, Port au Prince; president, Stenio Vincent. The area is 10,204sq.m. Population (est. 1936), 2,550,000. It is almost entirely negro. The chief cities are Port au Prince, 125,000, and Cap Haitien, 14,000.

Haitian overpopulation and underdevelopment have in the past caused emigration for work in sugar plantations in Cuba and in the Dominican Republic. Early in 1937 the Cuban government transported a considerable number of the emigrants back to Port au Prince. In October, a serious crisis with the Dominican Republic occurred, when Haitians living in that country were attacked by armed parties, instigated—so it was charged—by the Dominican president himself. By an agreement of Oct. 15, the Dominican government, while minimizing the entire affair, undertook to conduct an investigation to fix responsibility. As continued incidents were reported, the Haitian government, on Nov. 12, appealed to Cuba, Mexico, and the United States to use their good offices and to mediate. The Dominican government denied any such need, and, early in December, charged that counter-raids were being made. On Dec. 13, Haiti invoked the 'Gondra treaty' of 1923 and subsequent Pan-American pacts which provided for permanent inter-American committees of investigation. According to official Haitian estimates, 8,000 Haitians had been killed and a greater number wounded. Unofficial, normally reliable estimates placed the total as at least 10,000 killed. The year closed with considerable tension.

Fifteen ports are open to commerce. There are 164m. of railways and over 1,000m. of motor roads. In 1936, imports (textiles, foodstuffs, and miscellaneous manufactured goods) totalled £1,516,825 in value, chiefly from the United States (56·5 per cent.), with Great Britain (12·5 per cent.) second. Exports aggregated £1,889,542 (coffee, 62 per cent.; cotton, 15·3 per cent.), chiefly to France (47·2 per cent.), Great Britain (15·1 per cent.), and the United States (14·24 per cent.). In 1937, exports declined, as a result of the instability of coffee. Haiti ranks fifth as a world producer of coffee. Cotton, sugar, and sugar products are also important.

The monetary unit is the *gourde*, fixed by law at 20 cents U.S. The public debt on Nov. 30, 1937, was 43,418,702.07 gourdes, a reduction of over 4 millions in 12 months. Fiscal control is in the hands of a financial adviser nominated by the president of the United States. There are over 400 primary and secondary schools, with an enrolment in excess of 50,000. (L. W. Be.)

HALDANE, ELIZABETH SANDERSON, C.H., British authoress; born 1862; died Dec. 24, 1937. A brief notice of her life and work may be found in the *Ency. Brit.*, vol. 11, p. 86. Her more recent publications include: *Mrs. Gaskell and her Friends*, 1930; *The Scotland of Our Fathers*, 1933; and *Scots Gardens in Old Times*, 1934. Miss Haldane was created a Companion of Honour in 1918.

HALDANE, JOHN BURDON SANDERSON (1892–), British biologist and author; son of the late John Scott Haldane, F.R.S.; educated at Eton and New College, Oxford. Professor Haldane served in the World War, and on return to civil life specialized in the study of genetics, holding the Professorship of Genetics at London University since 1933. Professor Haldane, whose political views incline to the left, stood as a 'Popular Front' candidate in Oct. 1937 for the Rectorship of Glasgow University, but was defeated (*see* GLASGOW); earlier in the year he had visited Spain, to conduct experiments in civilian protection against gas attacks. During 1937, he also appeared in the new capacity of writer of scientific 'fairy stories' by the publication of *My friend Mr. Leakey.*

HALÉVY, ELIE, French historian; born at Étretat, Sept. 6, 1870; died at Sucy-en-Brie, Seine-et-Oise, Aug. 21, 1937. A biographical note is to be found in the *Ency. Brit.*, vol. 11, p. 90. The two volumes of his *Epilogue* to his famous *Histoire du peuple anglais au XIX^{e} siècle* appeared in 1926 and 1932 respectively, and, in an English translation, in 1929 and 1934 respectively. This work is held to be one of the best histories of the period 1815–1914, with the period 1841–95 left unfortunately uncovered at the time of Halévy's death. His other works include *The World Crisis, 1914–18*, 1930.

HALLIDAY, SIR FREDERICK (LOCH), British police officer; born Nov. 20, 1864; died Jan. 13, 1937. He joined the Bengal Police in 1885, and from 1905 to 1915 was Commissioner of Police, Calcutta. From 1918 to 1929 he was Chief of the British Police Mission to Greece. His decorations included the M.V.O., 1906, and the C.I.E., 1909, and he was knighted in 1912. In 1890 he married Ellen Bibra, and is survived by a son and a daughter.

HAPGOOD, NORMAN, American journalist; born in Chicago, March 28, 1868; died in New York, April 29, 1937. He was dramatic critic for *The New York Commercial Advertiser,* 1897–1902. As editor of *Collier's Weekly,* 1903–12, his editorials were influential in overturning the dictatorial control of Joseph G. Cannon, speaker of the House of Representatives. He also helped expose the land-grab scandals of the Taft administration, and led one of the first crusades for pure food and drugs. On becoming editor of *Harper's Weekly* in 1913, he actively supported the policies of Woodrow Wilson, and was rewarded in 1919 with the post of U.S. Minister to Denmark. His editorship of *Hearst's International Magazine* during 1923–25 was marked by war on the Ku Klux Klan, and he joined Henry Moskowitz in writing a biography of Alfred E. Smith entitled, *Up from City Streets,* 1927. His other publications included *Literary Statesmen,* 1897; *Daniel Webster,* 1899; *Abraham Lincoln,* 1899; *The Stage in America,* 1901; and *Industry and Progress,* 1911.

HARBOURS: *see* DOCKS AND HARBOURS.

HASKINS, CHARLES HOMER, American mediaevalist; born at Meadville, Pa., Dec. 21, 1870; died at Cambridge, Mass., May 14, 1937. After graduating from Johns Hopkins in 1887, he taught at Johns Hopkins, Wisconsin, and Harvard; and from 1903 to 1931 was dean of the Harvard graduate school. Among his publications were: *The Renaissance of the Twelfth Century, Studies in Mediaeval Culture, Studies in the History of Modern Europe, Norman Institutions, The Normans in European History,* and *The Rise of the Universities.* In addition to this work, for which he received many awards in both the United States and Europe, he served as chief of the division of western Europe of the American Commission to Negotiate Peace in 1918, and as a member of the committees on Danish and Belgian affairs and on Alsace-Lorraine and the Saar at the Paris Peace Conference. He refused the presidency of Johns Hopkins University in 1911, preferring to remain at Harvard.

HAWAII. The U.S. Territory of Hawaii consists of a group of eight larger islands (Hawaii, Kahoolawe, Maui, Lanai, Molokai, Oahu, Kauai, Niihau) and numerous islets including Midway (*q.v.*) and Palmyra in the Pacific Ocean. Their total area is over 6,438sq.m.; the capital is Honolulu, on the island of Oahu with a population (1930 census) of 137,582. Oahu is the scene of the United States' strongest fortifications in the Pacific. The racial origin of Hawaii's population (400,000 by 1937 estimate), in addition to the native Hawaiians and Caucasians from the mainland, is Japanese, Chinese, Korean, Filipino, Portuguese, with 81 per cent. native born; immigration into the Territory, except for citizens from the American mainland, has ceased.

The governor and Territorial secretary are appointed by the president. Otherwise the Territory is wholly self-governing. It elects to Congress every two years a delegate who has a voice in the House of Representatives but no vote. The governor in 1937 was Joseph B. Poindexter; and the delegate, Samuel W. King. The Territory collected in taxes and fees $13,242,666 in 1937 and expended $12,021,679. In addition, Federal taxes of $11,633,487.56 were paid into the United States Treasury, exceeding the payment of 17 States of the Union.

Agriculture.—Hawaii's chief crops are sugar and pineapples. The pineapple industry, second in importance, reached in 1937 a maximum of 879,641,271lb. with a value of $59,395,090. Other agricultural crops are coffee, macadamia nuts, papayas, and taro, a root used by the natives in making the native 'poi' and also now being processed into flour.

The tourist industry has developed rapidly in the last two decades, reaching a total of over 55,860 tourist visitors in 1937. One characteristic of Hawaii, unique among all regions under the American flag, is that there are no advertisement hoardings.

HAYASHI, SENJURO (1876–), Japanese general, was director-general of the military training department, war ministry, 1932–34, minister of war, 1934–35, premier Feb.–May 1937. As war minister he endeavoured to curb the more extreme groups among the younger officers, who held socially radical ideas. He felt morally obliged to resign, however, after one of his chief assistants, General Tetsuzan Nagata, had been murdered by a nationalist fanatic, Lieut.-Col. Saburo Aizawa, in Aug. 1935. General Hayashi reappeared on the political scene when he was appointed premier after a cabinet crisis in Jan. 1937. His predecessor, Mr. Koki Hirota, the present foreign minister, had resigned; and opposition from the army blocked the formation of a cabinet by General Kazushige Ugaki, who had first been entrusted with this task. At the end of March General Hayashi abruptly dissolved the Diet, accusing the legislators of not paying sufficient attention to their duties. The subsequent election was held under rather peculiar conditions, because both of the main parties, the Minseitó and the Seiyukai, had been criticized by Hayashi, and no political group of any size supported the premier. The results of the election revealed only minor changes in the composition of the new Diet and seemed to promise a deadlock between the premier and the Diet. This was avoided, however, because General Hayashi's cabinet resigned on May 31, giving way to a cabinet headed by Prince Fumimaro Konoye (*q.v.*). (W. H. CH.)

HEART AND HEART DISEASES. The greatest advances in our knowledge of circulatory disease lies in the present and future study of the causes of such disease, with especial view to their prevention. There are constantly new developments in our understanding of the way in which the heart and blood vessels are affected by all kinds of factors, and slight progress here and there has also been made in diagnosis, prognosis, and treatment. No outstanding discovery has been announced in the last year.

Anatomy and Physiology.—It is becoming more and more evident that the normal limits of heart size and rate and efficiency vary widely, making it very difficult to follow accurately as yet any set tables according to age, height, weight, or other easily calculated data. Family trends, the state of health, and physical training play important rôles not yet adequately recognized by those who are following limited criteria in the establishment of normal measurements, both anatomical and physiological, as, for example, in various tests of cardiovascular function and in X-ray studies. An illustration of this is in the determination of heart volume by X-ray (orthodiagraphy or teleroentgenography); although there is a gradually ascending curve according to body size, there are wide limits of the normal range of heart volume for each body size and age. In other words, we must still assess each individual case according to all the factors that we possess until such future time as we may have available adequate nomograms on which we may rely.

Anatomically and physiologically three interesting advances have been made in relation to the blood-vessels. In the United States, Winternitz of Yale discovered by delicate injection methods that the walls of some arteries are rich in minute nutrient vessels, called vasa vasorum ; it has long been known that such small vessels exist, but it was not realized that they were so numerous. The contention that their presence may play a major rôle in the production of arteriosclerosis as the result of minute haemorrhages in the arterial walls has not, however, been proved. The other advances concern the veins and the lymphatics respectively, the parts of the circulation which have been relatively neglected. Edwards has studied the valves in the veins, and their position and action in detail, and, like Homans, has taken particular interest in measures, especially muscular exercise, which tend to prevent stagnation, infection, and thrombosis which may lead to serious embolism in the lungs, a condition which has apparently been on the increase in late years. Drinker has continued his study of the lymphatics, and has found that they play an important rôle in tissue repair, the limitation of disease processes, and in the chemical and water balance in the body.

Further studies in cardiovascular physiology have made clearer the reflex sympathetic control of blood pressure by the mediation of certain sensitive areas in arteries and veins, particularly in the carotid sinus, aortic arch, pulmonary artery and veins, vena caval mouths, right auricle, and mesenteric arteries. Also the speed of blood flow and the volume of circulating blood have been shown to be influenced by congestive heart failure, the speed decreased and the volume increased.

Methods of Cardiovascular Examination have developed slowly, but two authoritative books on X-ray of the heart in the English language have been published recently, one by Hugo Roesler and the other by Chester Kurtz. Electrocardiography has come more firmly into its own with the final adoption of a routine chest lead in addition to the classical limb leads, and the realization of its great value in revealing otherwise concealed disease of the coronary arteries—a reason for routine electrocardiography by insurance examiners in the case of men of middle age or older who apply for large sums.

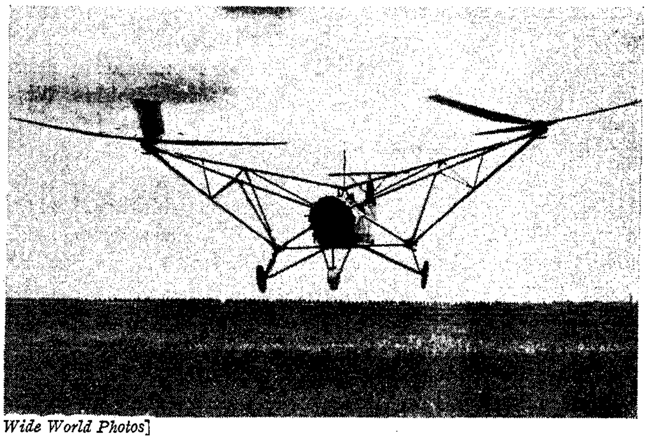
Diagnosis of Heart Disease.—The idea that the etiological diagnosis of heart disease is more important than the structural or functional diagnoses has spread apace, and has proved of great aid ; it has helped, for example, in the understanding of rapidly developing enlargement and failure of the heart that may sometimes result from severe rheumatic fever or extensive coronary thrombosis. More analyses are being made and reported of the relative incidence of the various kinds of heart disease in various parts of the world, a vital step in the advance of our knowledge, but no more important than studies of their absolute incidence which still remain to be done. Not only may such studies help to indicate the magnitude of the problem of heart disease, but they are almost certain to reveal important clues as to the pathogenesis and eventual reduction of the most important causes, which are the rheumatic infection, high blood pressure, and arteriosclerosis, especially as it involves the coronary arteries. Congenital heart disease and certain other of the rarer types like pulmonary heart disease and nutritional disease have received special attention in the past year, and are no longer considered the remote and mysterious subjects which they once were.

Treatment.—The major interest in treatment is beginning to be diverted, as it should be, from zealous attempts to give relief to advanced heart disease and heart failure by radical and sometimes almost bizarre methods, to the more justified zealous attempts to treat the causes at their inception, and to establish simple health measures in the case of cardiac patients which may retard increase of heart disease and postpone heart failure. Already a decrease is obvious in certain more enlightened parts of the world in the incidence of cardiovascular syphilis, hitherto a major problem, and of thyrotoxic heart trouble. No new drugs of importance have been introduced. Reparative surgery of heart and pericardium continues to advance with occasional cures of cases that would formerly have perished or have lived hopelessly crippled lives. (P. D. W.)

HEJAZ: *see* Arabia.

HELICOPTER. The word ' helicopter ' is used to define a heavier-than-air aircraft that lifts and flies on wings which rotate under power of a contained motor. Under this definition, the wings of the helicopter may rotate in a radial cycle about a vertical axis or in a cylindrical cycle about a horizontal transverse axis.

Up to 1937, all efforts to develop a successful helicopter resulted in partial or complete failure. In 1916, partially successful flight tests were made with the captive helicopter developed by Petroczy and von Karman (Austria). This machine, with two 20-ft. concentric radial two-bladed airscrews, rose vertically to a height of 160 feet. Other partially successful helicopters were produced by Henri Breguet (France), Henry Berliner (U.S.), de Bothezat (U.S.), Etienne Oehmichen (France), Pescara (Spain), and von Baumhauer (Holland).



Wide World Photos]

THE NEW GERMAN TWIN-ENGINED HELICOPTER, BUILT BY PROFESSOR HEINZ FOCKE

The most successful helicopter to date is the Focke-Wulf Fw.61 (Germany). This machine, with two 23-ft. diameter three-bladed radial rotors turning about vertical axes arranged laterally on each side of the fusilage, flew on June 25–26, 1937, a total distance in closed circuit of 122·533km. (76·105m.) at a speed of approximately 76m.p.h. Duration of flight was 1hr. 20min. 49sec. ; altitude reached, 2,500 metres (8,200ft.).

Many believe the helicopter-type of flying machine has great promise in the efforts to improve safety, reliability and convenience of aviation.

HEMP: *see* Sisal, Hemp, and Cordage Fibres.

HEPBURN, MITCHELL FREDERICK (1896–), premier of the province of Ontario, Canada, was born at St. Thomas, Ontario, Aug. 12, 1896. Mr. Hepburn was first elected to the House of Commons in 1926 and was re-elected in 1930. He became premier in 1934.

During 1937, Mr. Hepburn took an active part in opposing the entry of the Committee for Industrial Organization into Ontario labour ranks. This was the outcome of a strike of 3,700 motor workers at Oshawa, Ontario, on April 8. On April 14, his labour minister, David Croll, and attorney-general, A. W. Roebuck, resigned in protest against this policy. Mr. Hepburn also stated that the Federal government was not supporting his policy. Refusing to deal with the Committee for Industrial Organization representatives, he intervened in the strike, and a settlement was reached on April 22. Largely on this policy he appealed to the people, and was returned to office on Oct. 6 with 63 seats out of 90.

The breach between the Federal ministry and Mr. Hepburn was further widened when in December the prime minister, Mr. Mackenzie King, deferred for consideration of Parliament a request for a licence to export power from Ontario to the United States. (J. T. C.)

HEREDITY. More than a thousand papers concerning heredity were published in 1937, it is estimated, and these were in at least 10 different languages. Under these circumstances, all that can be attempted here is to select a few results that appear to be more important.

Snyder and Davidson have found that diphenylguanidine has a bitter taste to about 75 per cent. of the people tested, but is tasteless to the remaining 25 per cent. Tasting appears to depend on a single dominant gene that is independent of the previously known gene for tasting phenylthiocarbamide. There is thus added a new member to the small list of widely distributed and easily classified genetic differences in man, and on such additions depends the chief hope of an adequate analysis of human heredity. Sonneborn has shown that clones of paramecium may be classified, according to their conjugation reactions, into what must be considered different sexes. There results a technique for studying the genetics of this form that will certainly revolutionize our knowledge of heredity in the protozoa. There is already reason to suppose that the principles worked out for higher organisms will apply with relatively little modification.

Blakeslee reports that a doubling of the chromosome number may be induced, in somatic tissues of a wide variety of plants, by treatment with dilute solutions of colchicine. Owing to the well-known importance of polyploid forms in horticulture, a technique for their artificial production at will should be of great practical, as well as theoretical, value.

Numerous papers have appeared that deal with the developmental effects of genes. The results of tissue and organ implantations in drosophila (Beadle, Ephrussi, and others), ephestia (Kuhn and others), the silkworm (Kikkawa), and fowls (Willier and Hadorn), may be especially mentioned here. These studies may help in an attack on the manner of action of genes. In this connexion geneticists are also interested in the recent biochemical advances in the study of proteins, enzymes, viruses, bacteriophage and essential growth substances (vitamins, auxins, etc.).

The application of the methods and principles of genetics to the study of evolutionary problems has advanced during 1937. Outstanding here is Wright's development of a general formula representing the effects, on mixed populations, of mutation, selection, migration, and inbreeding. Another important event is the publication of Dobzhansky's book, *Genetics and the Origin of Species*, which gathers together for the first time the newer mathematical developments, the pertinent facts from genetics and cytology, and a mass of material from the field study of organisms under natural conditions.

The relation of the chromosomes to heredity has long been recognized, and has stimulated a vast amount of microscopical study of the chromosomes. The present year has seen a large number of publications in this field, dealing largely with the nature and structure of the salivary gland chromosomes of the diptera, with the details of meiotic behaviour, especially in structural hybrids and especially in plants, and with preliminary cytological surveys of new groups of organisms. (*See* also GENETICS.) (A. H. ST.)

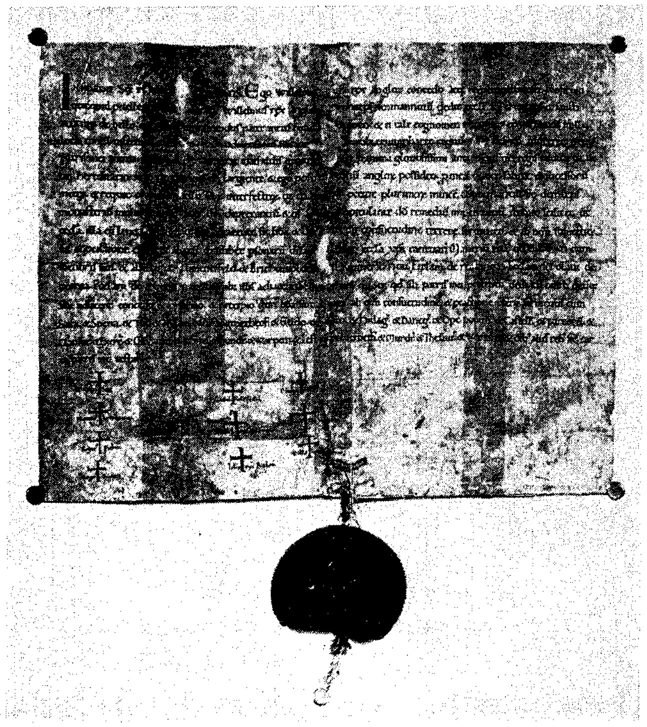
HERRING MARKETING BOARD: *see* MARKETING BOARDS.

HERTZOG, JAMES BARRY MUNNIK (1866–), South African barrister and statesman. A biography may be found in the *Ency. Brit.*, vol. 11, p. 527. He has been prime minister from 1924 and minister of external affairs since 1929, and leader since its formation in 1934 of the United South African National Party.

Gen. Hertzog, as representative of the Union of South Africa, attended the coronation ceremonies in London in May 1937, and the subsequent Imperial Conference; on his return he stated that the Imperial Government had failed to keep its promise regarding the handing over of the native territories to the Union, but it was later agreed that there had been a misunderstanding on this point. He also expressed his hope for German co-operation in solving the problem of S.W. Africa with a view to its ultimate incorporation in the Union. In September, opening the government campaign before the 1938 elections, Gen. Hertzog made an important speech at Pretoria dealing with his country's relations to Europe and international politics; deploring the continuance of 'War-time' psychology among European statesmen and peoples; and, while emphasizing his party's intention to promote native happiness, asserting that the native would be given no authority within or over the government of the country.

HINSLEY, ARTHUR: *see* WESTMINSTER, CARDINAL ARCHBISHOP OF.

HISTORICAL RESEARCH. In recent years there has been a definite and praiseworthy effort on the part of historians to secure greater co-operation between workers in the various fields of historical research, and a more effective co-ordination of historical studies. One of the best methods of achieving these ends has been found in the establishment of national and international conferences, and the year 1937 has been rich in these. A conference of historians from the Baltic countries took place in August at Riga, where many aspects of Baltic history were discussed by representatives from Sweden, Poland, Germany, Lithuania, Estonia, Finland, Denmark, and Norway; while in Belgium about the same time an international congress met to discuss problems arising from local history. In Paris for the third year in succession, there was a joint meeting of French and English historians, and later in the year a similar meeting between French and Belgians. The first congress of Czech historians met at Prague in May to review the present state of historical studies in Czechoslovakia, and to make plans for the promotion of historical research and the training of young historians. In July, the German historians met at Erfurt, for the first time since the National Socialist revolution, to discuss the three principles held to be the foundations of contemporary historical work in Germany: 'the recognition that all historical writing can only be political history writing, that race and folkdom are the carrying and forming factors in historical development, and that German historical writing at the present day is, and must be, the history of all the Germans'. Other conferences convened during the year included the second International Congress



Sport and General]

THE CHARTER GRANTED TO BATTLE ABBEY IN SUSSEX BY WILLIAM II, WHICH HAS BEEN ACQUIRED BY THE MANUSCRIPT DEPARTMENT OF THE BRITISH MUSEUM. THIS IS SIGNED BY THE KING AND WITNESSED BY VARIOUS NOBLES AND BISHOPS

of the History of America, the third French Congress of Historical Sciences, and an international congress on Turkish history.

The International Committee of Historical Sciences, which forms the main link between historians of all countries, announced during the year the formation of a Far-Eastern commission, including China, Japan, French Indo-China, India, and the Soviet Union, thus paving the way for real co-operation between the historians of East and West.

A further very welcome collaborative effort was the announcement of a projected journal of Irish Historical Studies, to be published jointly by the Irish Historical Society and the Ulster Society for Irish Historical Studies. Several new historical journals appeared during the year, including the *Deutsches Archiv für Landes-und Volksforschung*, the *Deutsches Archiv für Geschichte des Mittelalters*, and the *Jomsburg, Völker und Staaten im Osten und Norden Europas*, dealing with the country lying between the Elbe and the western boundary of Soviet Russia, the Danish Sound and the Carpathians. In the United States, *Events*, a magazine intended to enlist the scholarship of the historian, the political scientist, and the economist in the recording and interpretation of current developments, met with a successful reception. In England, the Royal Historical Society has followed the example set some years ago by the American Historical Association in producing the first of an annual series of volumes entitled *Writings on English History*, which covers publications for the year 1934. On the other hand, scholars in the United States have completed the *Dictionary of American Biography* which was modelled originally on the English *Dictionary of National Biography*.

At the instigation of the Rumanian Government, the 'Institut pour l'Étude de l'Histoire Universelle' has been established at Bucharest under the direction of Prof. Jorga. Its objects are to study questions which transcend national boundaries and to strengthen the relations between Rumanian and foreign scholars by a series of international conferences. An increasing interest in the United States in the preservation of historical records encouraged the American Historical Association to establish a Society of American Archivists, with the object of promoting sound principles of archival economy and of facilitating co-operation among the several archival agencies. The American Documentation Institute was also incorporated during the year to develop facilities which may be expected to promote research and knowledge in various intellectual fields. One of its first objects is to investigate and develop the new technique of microphotography. This problem has also received attention in Great Britain, where a committee of the Anglo-American Historical Conference, through its executive the Institute of Historical Research, is investigating the possibilities of the application of small-scale photography to historical research. There can be little doubt that the successful reduction of documents on cinematograph film is likely to have a great influence on the technique of historical research. The increased interest in historical materials is evident in all countries; to take but a few examples, it has led to a movement in the British Isles for the preservation of business archives, the establishment of a committee to survey the sources for the history of Malta, and to the formation of an International Council of Scholars to make available the remarkable documentary treasures of Florence. (M. Fl.)

HISTORY MUSEUMS. The National Maritime Museum, Greenwich, London, was opened on April 27, 1937, by King George VI, accompanied by the Queen, Queen Mary, and Princess Elizabeth. This museum illustrates the marine history, archæology, and art of Great Britain; its collections include every type of object connected with marine matters and the contents of the Painted Hall are incorporated. The principal donors were Sir James Caird, Bt., the King and Queen, Queen Mary, and the Earl of Sandwich. The director is Professor Geoffrey Callender, M.A., F.S.A. The Queen's House, the heart of the museum, was built by Inigo Jones in 1616–35, first for Anne of Denmark and finished for Queen Henrietta Maria. It is connected by colonnades to other buildings adapted by the Office of Works at the expense of Sir James Caird.

Sheffield's new museum, the gift of Alderman J. G. Graves, was opened in April by Sir Philip Sassoon. Early Sheffield silver and plate received special consideration. Belgrave Hall, Leicester, was opened as a period museum by Alderman Charles Squire. The Eastbourne Life Boat museum was opened in March, and the Scunthorpe Borough museum in September. The National Museum of Wales opened a new east wing, and a 16-mm. sound film apparatus was installed in the Rearden Smith lecture theatre. The national naval and military museum of Edinburgh Castle acquired the oldest known post-Reformation military standard, that of a troop which first paraded in 1661. The National Museum of Ireland, Dublin, acquired a collection of Cork glass and family silver, and the Plymouth Museum a model of a second-rate line of battleship of 1680.

Temporary exhibitions suggested by the coronation included a history of English coronations at Salford; portraits of kings and queens at the Victoria and Albert Museum; coronation models at Hanley, and coronation robes at the Royal Scottish Museum, Edinburgh. Other temporary exhibitions included, at the Royal United Services Museum, the history and dress of British cavalry from the time of

Cromwell to the present, including relics of Prince Rupert, Cromwell, Combermere, Anglesey, and Allenby; Welsh furniture at the National Museum of Wales; costumes of the Empire at Batley; Elizabethan furniture at Luton; and ancient American art from A.D. 700 at the Abbey Folk Park and Museum, New Barnet.

The London Museum celebrated its silver jubilee with a reception at which the Princess Royal and the Earl of Harewood welcomed the guests.

Mr. Clarke, curator of the Museum of Archaeology and Ethnology at Cambridge, was appointed director of the Fitzwilliam Museum, Cambridge, in succession to Sir Sydney Cockerell. Miss G. V. Barnard, previously assistant curator, became curator of the Castle Museum, Norwich, on the retirement of Mr. Frank Leney.

The city of Antwerp received the house in which Rubens lived. After restoration, the house will be turned into a museum with representative examples of Rubens' work. The Museum of Art History, Vienna, transferred collections of armour to the Neue Hofburg, leaving more space for the display of the treasures of the museum.

In the Manitoba Museum, Winnipeg, Canada, an old settler's room was set up; and at Brooklyn, New York, the Japanese gallery, closed for a year, was re-opened. The Old Dockyard and Nelson Museum at Antigua reconditioned and partly restored two old houses, one a mast house with joiners' loft, the other a cordage, canvas and clothing store. (V. R.)

The various 'villages' of the Paris Exhibition were inspired by the example set long ago in Scandinavia, and something of the same sort is appearing in the United States, such as the Williamsburg reconstruction in Virginia, and the restoration of the Derby Wharf national historic site at Salem, Mass. Examples dating from 1932 are the Mandan Indian village in North Dakota, and a similar reconstruction at Mound park, Tuscaloosa, Alabama.

Among historic houses in the United States recently converted into museums are those of presidents Andrew Johnson, James Buchanan, and Benjamin Harrison; of the poets, James Whitcomb Riley, Paul Lawrence Dunbar, and Edgar Allan Poe; of the painter, Winslow Homer; and of Admiral John Paul Jones and General Stonewall Jackson. In some cases the undertakings of this sort will serve both art and history, as, for example, making a State park of the Ephrata Cloisters in Pennsylvania, where the church, sisters' house, brothers' house, and several small structures will form an open-air museum of unique architectural character and historic significance. In other cases sentiment chiefly will be served, as by the Betsy Ross house, and the Squire Boone farm (birthplace of the explorer Daniel Boone). The *reductio ad absurdum* is exemplified by the turning into a museum of the Wallis Simpson home in Baltimore.

Fox Photo]

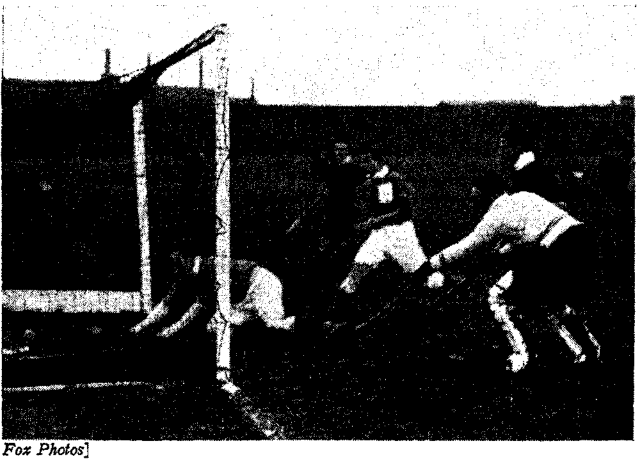
THE NATIONAL MARITIME MUSEUM, GREENWICH, SHOWING THE QUEEN'S HOUSE, BUILT BY INIGO JONES 1616–35

HITLER, ADOLF (1889–), German statesman, was born at Braunau on the Inn, in Austria, on April 20, 1889. A brief account of his early career may be found in the *Ency. Brit.*, vol. 11, p. 598. On his release from prison in Dec. 1924, as a result of a general amnesty, he devoted himself to building up various organizations to strengthen the Nazi Party: Brown Shirts (*q.v.*), Elite Guard (*Schutz-Staffeln* or 'SS'), Hitler Youth (*Hitler Jugend*), and other formations. With the aid of these, with efficient lieutenants, and with his magnetic oratory, his Nazi Party grew rapidly in power, winning 12 Reichstag seats in 1928 and 230 in July 1932. On Jan. 30, 1933, Hitler was appointed Reich Chancellor, and began the social and political revolution establishing the 'Third Reich'. Upon Hindenburg's death, on Aug. 1, 1934, Hitler succeeded him as president, but modestly refrained from using the title and is known simply as Reich Leader (*Führer*) and Chancellor.

Herr Hitler's chief activities in 1937 were: a speech on Jan. 30 on the occasion of the fourth anniversary of the National Socialist revolution; his reconciliation with General Ludendorff on March 30; his interview with Mr. Lansbury on April 19; and his emphasis upon the need for a return of the former German colonies, expressed on Sept. 7 at the annual National Socialist Party Congress at Nürnberg, and on Nov. 21 at a mass meeting at Augsburg. *See* also GERMANY; NATIONAL SOCIALISM.

HOCKEY, a very ancient game, is widely played in Europe, most of the British Empire, Japan, and to some extent in other countries. Primarily a men's game, it is now played quite generally by women under practically the same rules. Although England is regarded as the birthplace of modern hockey, the game has reached its greatest development in British India, where it is played by hundreds of thousands of persons, both in the army and in civilian life. Teams representing British India won the Olympic championship in 1928, 1932, and 1936. In the men's international matches, Ireland won all three of her matches, England lost to Ireland, Scotland lost to Ireland and England, and Wales lost all her matches. The university match was won by Oxford by 3 goals to nil. International matches, played under the auspices of the All-England Women's Hockey Association, resulted in England winning all three matches, Ireland losing to England, Scotland losing to England and Ireland, and Wales losing all three matches. A team of German women was beaten both by England and by Ireland, and in each case by 5 goals to nil. A touring British women's team was beaten by Australia by 5 goals to 4 at Brisbane. Oxford women beat Cambridge women by 5 goals to nil.

The modern version of the game was taken up in the United States first by women shortly after the turn of the century. Men did not take it up until about 1926. Consequently, although hockey is played by a great many girls' school, college, and club teams, there are as yet only a few men's teams. The men's clubs are located chiefly in and around New York, Philadelphia, and Baltimore. Men's teams representing the United States competed in the Olympic games of 1932 and 1936. With a view to keeping hockey on the strictly amateur basis on which it exists throughout the world, the Field Hockey Association of America follows the example set by the board governing



Fox Photos]

HOCKEY: IRELAND *v.* WALES AT CARDIFF. PHOTOGRAPH SHOWS IRELAND, WHO WON BY THREE GOALS TO NONE, SCORING THE FIRST GOAL AGAINST WALES

the sport in England, and does not sanction any leagues, cups, or national championships.

Women's field hockey is governed by the United States Field Hockey Association in co-operation with a hockey committee of the women's section of the American Physical Education Association.

HOCKING, JOSEPH, British novelist; born at St. Stephen's, Cornwall, 1861; died near St. Ives, Cornwall, March 4, 1937. A mention of his best-known novels, together with those of his elder brother Silas (1850–1935), may be found in the *Ency. Brit.*, vol. 11, pp. 617–18. Joseph Hocking was pastor of the Union Free Church at Woodford, Essex, from 1884 to 1910. He continued to publish novels up to 1936. He married Annie Brown in 1887, and is survived by her and four daughters, his son having been killed in the World War.

HODGE, RT. HON. JOHN, British trade unionist and politician; born at Muirkirk, Ayrshire, Oct. 29, 1855; died at Bexhill, Sussex, Aug. 10, 1937. Very early in life he formed, at Motherwell, the nucleus of the British Steel Smelters' Association, and in 1917 was active in the formation of the British Iron, Steel, and Kindred Trades Association and of the Iron and Steel Trades Confederation. He became president of both the Associations and of the Confederation, retiring in 1931. He unsuccessfully contested Gower, 1900, and Preston, 1903, before being returned to Parliament in 1906 as labour member for Gorton. In 1915 he was elected vice-chairman of the Parliamentary Labour Party, and in the second Coalition Government he was minister of labour, 1916–17 (being the first occupant of this new post), and minister of pensions, 1917–19. In 1916–17 he served on the Mesopotamia Commission to inquire into the conduct of the Turkish campaign. He married, 1885, Mary Forsyth (*d.* 1931), and had four daughters. He published in 1931 an account of his visit to King George V and Queen Mary under the title *Workman's Cottage to Windsor Castle.*

HOLLAND: *see* NETHERLANDS.

HONDURAS. A Central American republic; capital, Tegucigalpa (pop. 50,000); president, General Tiburcio Carías Andine. The area is 46,332sq.m. Population by the 1935 census was 962,000, and was estimated at 974,025 in 1936. The official language is Spanish. The two outstanding events of the year 1937 were a revolution in the outlying districts in February, which was suppressed by aeroplanes, and the boundary dispute with Nicaragua (*see* NICARAGUA). Behind the revolution lay serious economic difficulties engendered by the abandonment of many banana plantations because of 'Panama disease'. President Carías maintained a very precarious control, with only the army receiving regular pay. Foreign trade in 1936 declined 10 per cent., although a slight betterment was discernible in 1937. Imports in 1936 totalled £1,744,626; exports (chiefly bananas, with some gold) aggregated £1,843,042. Most of the foreign trade is with the United States. Honduras has approximately 600 miles of railways and 250 of intercoastal highway. External communication is by steamer and Pan-American Airways. The monetary unit is the lempira. The 1937 budget called for £1,143,170, with slightly over 10 per cent. allotted to education. In 1936, there were 789 schools and 36,318 pupils.

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SPANISH HONDURAS. A COCONUT PLANTATION BY THE SALADO RIVER

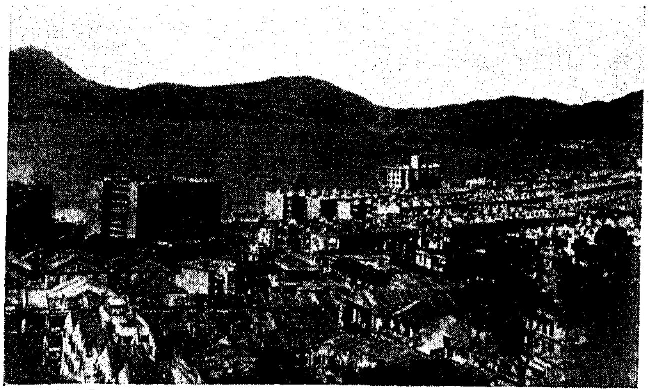
HONG KONG, consisting of several islands and part of the mainland at the mouth of the Canton river on the Chinese coast, is a British crown colony ruled by a governor with executive and legislative councils; area, 32sq.m.; population (est. 1937) 1,010,000 (including 22,250 non-Chinese civilians). Capital, Victoria (pop. *c.* 400,000). Hong Kong has a university; the total school attendance is about 75,000.

Sir Geoffrey Stafford-Northcote succeeded Sir Andrew Caldecott as governor during 1937.

Although no hostilities occurred in the colony during 1937, extensive defence measures were undertaken as a result of the Sino-Japanese conflict; works were erected on the frontier to prevent the entrance of panic-stricken troops, and every citizen was required to purchase a gas-mask. In December assurances were given by Japan that her navy would respect the integrity of Hong Kong and its territorial waters.

In February a report on the Mui Tsai (Chinese domestic girl servitude) system found that the 1929 policy of gradual suppression was succeeding, and recommended its continuance. (In the same month the Shanghai Municipal Council took steps to suppress this system.) On Sept. 2, a severe typhoon struck Hong Kong, accompanied by a tidal wave, by which much material damage was done and some hundreds of persons drowned.

Hong Kong's trade is mostly with Great Britain, Eastern lands, and the United States. Its imports in 1936 were valued at £30 millions and its exports at £25 millions. Revenue and expenditure were £1,875,000 and £1,844,500 respectively. The headquarters of the Hong Kong and Shanghai Banking Corporation are in the colony. There is a Volunteer Defence Corps, and the China Squadron of the British fleet has its headquarters here.



Fox Photos]

A VIEW OF HONG KONG HARBOUR WHERE A TYPHOON CAUSED MUCH LOSS OF LIFE IN SEPTEMBER 1937

HOPS. The six principal hop-growing countries of continental Europe—Germany, Czechoslovakia, Poland, France, Yugoslavia, and Belgium—produced about 56,800,000lb. of hops in 1937, as estimated by the Central European Hop Association. This compares with a crop of 68,343,000 in 1936. In England and Wales the 1937 crop was estimated at 26,320,000lb. from 18,093ac., as against 28,224,000lb. from 18,317ac. in 1936. In the Pacific Coast States of the United States, production was estimated by the department of agriculture at 44,399,000lb. in 1937, compared with 25,156,000lb. in 1936 and 47,746,000 in 1935, with a yield of 1,302lb. to the acre in 1937, as against 814 in 1936. Labour shortage and market conditions caused an estimated 4,365,000lb. of the 1937 crop to be left on the vines. Government control in Germany resulted in decreasing the 1937 acreage by 15 per cent., but the government guarantee of a minimum price has resulted in a larger yield per acre. In Czechoslovakia, government control has not succeeded in reducing the acreage, but has managed to stabilize it since 1934, in conformity with a policy similar to that of Germany, which proposes production for domestic needs only until prices are better. Poland and Yugoslavia increased their acreages in 1937.

HOPS MARKETING BOARD: *see* MARKETING BOARDS.

HORMONES: *see* ENDOCRINOLOGY and PHYSIOLOGY.

HORNADAY, WILLIAM TEMPLE, American zoologist; born at Plainfield, Ind., Dec. 1, 1854; died at Stamford, Conn., March 6, 1937. A biography of him may be found in the *Ency. Brit.*, vol. 11, p. 751. His later publications included *Thirty Years' War for Wild Life*, 1931.

HORNIMAN, ANNIE ELIZABETH FREDERICKA, C.H., British theatrical manager; born at Forest Hill, London, Oct. 3, 1860; died at Shere, Surrey, Aug. 6, 1937. For a notice of her career, *see* the *Ency. Brit.*, vol. 11, p. 753. After her retirement from the Gaiety Theatre, Manchester, in 1921, she was little in the public eye; but her name will always be associated with the repertory theatre movement. She was made a Companion of Honour in 1933.

HORSE-RACING. Horse-racing in Great Britain during 1937 benefited to some extent from the presence of visitors for the coronation, but that was not the only reason for increased attendances at the racecourses. Popularity with the public in general was gained largely because the majority of executives made an effort to give value for money in the way of better racing and improved accommodation. This desirable state of affairs was brought about in some degree through grants made by the Betting Control Board from Totalizator profits of the previous year, and there is little doubt that this source of racecourse revenue will increase annually.

The flat-racing season was remarkable chiefly for the failure as three-year-olds of the horses that had been considered the best two-year-olds twelve months previously. For example, the winner of the Derby, *Midday Sun*, was not even thought of in connexion with the Epsom classic race until after he had won the Free Handicap Sweepstakes only six weeks earlier. *Midday Sun* belongs to Mrs. G. B. Miller, who thus became the first woman-owner to win the Derby, if the victory gained by Lady James Douglas with *Gainsborough* in a war-time substitute Derby at Newmarket is excepted. *Midday Sun* also finished third in the Two Thousand Guineas and the St. Leger, and undoubtedly had the most consistent classic record of the three-year-old colts. The Two Thousand Guineas went to France through the success of Monsieur E. de St. Alary's *Le Ksar*, whose trainer, the late Frank Carter, thought so little of his charge's chance that he did not trouble to go to Newmarket to see the race. *Chulmleigh*, owned and bred by Lord Glanely, won the St. Leger at Doncaster in the style of a good staying colt, and is expected to have a successful season this year before being retired to the stud. The two classic races for fillies were both won by *Exhibitionnist*, who, like *Midday Sun*, is by *Solario*. In fact, *Gainsborough*, the sire of *Solario*, was responsible for four classic winners, as *Chulmleigh* is by *Singapore*, another of *Gainsborough's* stock.

Solario easily headed the list of winning sires, 16 of his progeny having won 26 races to the value of nearly £53,000 between them. The *Phalaris* horse, *Fairway*, came second, *Blandford*, now unhappily dead, third, and *Singapore* fourth. It is interesting, from a breeding point of view, to recall that *Solario*, *Fairway*, and *Singapore* all won the St. Leger of their year.

The Aga Khan headed both the winning owners' and winning breeders' lists, his own horses having won more than £30,000 and those bred by him just over £46,000. Other prominent winning owners were Sir Abe Bailey, Sir Victor Sassoon, whose first classic successes were gained by *Exhibitionnist*, and Mr. William Woodward, whose St. Leger winner of the previous year, *Boswell*, won the valuable Eclipse Stakes at Sandown Park. Mr. Woodward, who is chairman of the New York Jockey Club, also came second to the Aga Khan in the list of winning breeders, Sir Victor Sassoon being a close third, and Lord Glanely fourth. Mr. Woodward's horses are trained at Newmarket by Captain Cecil Boyd-Rochfort, who won more money in stakes than any other trainer for the first time in his career. His total of more than £61,200 beat the Manton trainer, J. Lawson, by over £9,000; Frank Butters, who trains for the Aga Khan, coming third with nearly £49,000.

Gordon Richards, as seems inevitable nowadays, was once again champion jockey, having ridden 214 winners. The north-country rider, W. Nevett, was second with 110 winning mounts, eight more than H. Wragg, who was third.

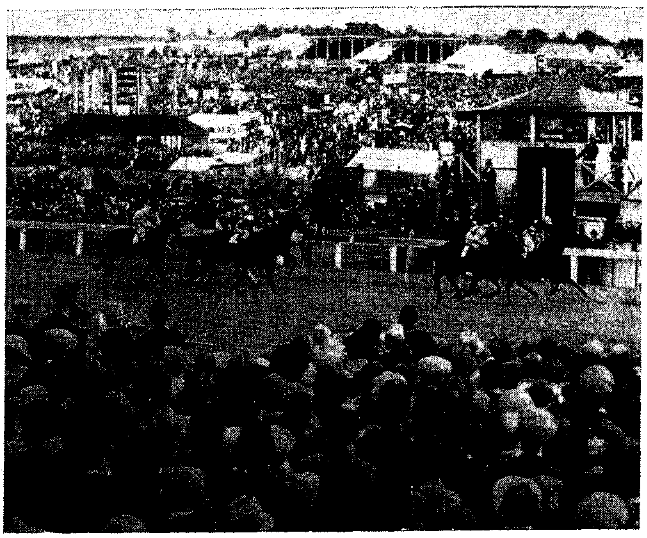
Of the weight-for-age events, the most impressive performance of the season was that of *Precipitation*, who won the Ascot Gold Cup. Lady Zia Wernher's colt was sired by *Hurry On* three years before that great horse died, and *Precipitation*, the best of all his sons, has been retired to the stud in the hope that he will be able to carry on a line that most of *Hurry On's* sons have failed signally to do. The American-bred *Flares*, by *Gallant Fox*, and owned by

Mr. Woodward, won the Champion Stakes after a fine finish with the French-bred *Goya II*. *Flares* was also successful in the Princess of Wales Stakes. The Goodwood Cup went to *Fearless Fox*, a son of the *Son-in-Law* horse, *Foxlaw*, who unfortunately died all too early. *Fearless Fox* earlier had won the Ascot Gold Vase, but was unexpectedly beaten in the Doncaster Cup by *Haulfryn*. The Jockey Club Stakes was won by *Solfo*, another *Solario* colt who should be of great value at the stud when the time comes for him to be retired. A new race, called the Aintree Derby, run at the Liverpool November Meeting, provided *Cash Book* with the opportunity to compensate Lord Astor for his failure in the Epsom Derby, for which he started favourite. This owner and breeder experienced more misfortune when his unbeaten two-year-old, *Early School*, was found to have tendon trouble and could not take part in the classic races.

Most of the big handicaps had unexpected results, starting with *Marmaduke Jinks*, who gained a narrow victory in the Lincolnshire Handicap on the third day of the season, starting at odds of 33 to 1. *William of Valence*, French-bred as his name indicates, made a name for himself by winning the Rosebery Stakes at Kempton Park, the Lingfield Park Spring Stakes, and the City and Suburban Handicap at Epsom in successive appearances on the racecourse; but he achieved nothing of note afterwards. The Cambridgeshire was run before the Cesarewitch at Newmarket last season for the first time in the history of these two important handicaps. The reason for the change was the contention that horses could not compete in both events so long as the longer was run before the shorter. Actually no horse took part in both races. *Artist's Prince* won the Cambridgeshire, and *Punch* beat the previous year's winner, *Fet*, in the Cesarewitch.

Of the two-year-olds, the Aga Khan's *Mirza II* proved unbeatable over five furlongs, but was defeated over six furlongs by *Portmarnock* at Doncaster and by *Scottish Union* at Newmarket, and is only a sprinter at the best. The two last, with *Unbreakable*, who was bred in the United States by Mr. J. E. Widener and is by the English horse, *Sickle*; *Golden Sovereign*, who won the Gimcrack Stakes for Sir Abe Bailey; Lord Derby's colt *Onslaught*; and the two fillies, *Stafaralla* and *Radiant*, owned respectively by Prince Aly Khan and Miss Dorothy Paget, are likely to play prominent parts in the classic events of the coming season. The best of the others may well prove to be *Ramtapa*, who scored an unexpected victory at Ascot, but ran only once afterwards on account of the hard ground.

Sir Victor Sassoon was the leading owner in Ireland, four of his horses having won seven races to the value of £4,642. His best winner was *Phideas*, who was successful in the Madrid Handicap, the Two Thousand Guineas, and the Derby. It was hoped that he would follow in the footsteps of his half-brother, *Museum*, and win the Triple Crown, but hard ground prevented it. The best of the two-year-olds were *Knight's' Caprice*, owned by Colonel Clarke, and Mr. D. Sullivan's *Rosewell*. Mr. Sullivan won the One Thousand Guineas and the Oaks with *Sol Speranza*. J. T. Rogers headed the winning trainers' list for the third year in succession, and has since announced his retirement from racing. The stable will in future be controlled by his son. The champion jockey was M. Wing, who rode 66 winners.



Fox Photos]

RACING AT EPSOM. 'CECIL' AND 'HIS GRACE' RUNNING A DEAD-HEAT IN THE CORONATION CUP, 1937

The outstanding performance of the United States season was put up by the three-year-old, *War Admiral*. Owned and bred by Mr. Samuel D. Riddle, this son of *Man o' War*, the greatest of all modern American thoroughbreds, won five races in succession, including the Kentucky Derby, the Preakness Stakes, and the Belmont Stakes, which constitute the American Triple Crown.

The season under National Hunt Rules in Great Britain suffered alike from hard grounds in the summer months and frost and snow in the winter. The Grand National at Liverpool was won by Mr. Lloyd Thomas's *Royal Mail*, ridden by E. Williams and trained by I. Anthony. *Golden Miller*, who started favourite, refused at the same fence that he would not jump the previous year. Only 7 of the 33 starters completed the course. The Cheltenham Gold Cup, which *Golden Miller* was expected to win for the sixth year in succession, could not be run, snow causing the last two days of the National Hunt Meeting to be abandoned. *Airgead Sios*, one of the most brilliant steeplechasers up to two miles, or even three, seen for a long time, won the Champion Steeplechase at Aintree, and others to make names for themselves were *Macaulay*, *Argental*, and *Solarium*.

Of the hurdlers, Mr. James V. Rank owned probably the two best in *Le Maestro*, winner of the Imperial Cup at Sandown Park, and *Beachway*, who gained an easy victory in the Liverpool Hurdle. (A. K. B.)

HORTICULTURE. In England the coronation has had a noticeable influence on the flower industry. There was a marked increase in the demand for cut flowers and flowering plants in pots; blue iris, white and blue hydrangeas, red rhododendrons, geraniums, and tulips in particular were produced in greater quantities than ever before, and all found a good market. In fact, 1937 has been throughout a good year for the flower grower.

Bulb Flowers.—Amongst cut flowers, bulb flowers from the open field and under glass are the most important in the English flower industry. Of daffodils, *King Alfred* remains the outstanding public favourite, while progress during the year has been noticed with the varieties *Dawson City*, *Helios*, *Forerunner*, *Fortune*, *Mrs. Barclay*, and *Cheerfulness*. Daffodils are now available by Christmas through the use in the forcing houses of 'prepared' bulbs, *i.e.* those given treatment in cold storage before boxing. Many more tulips, however, are forced in England than any other bulb flower; of these *William Copeland*, *Bartigon*, and *William Pitt* are still the leading varieties, but *Rose Copeland* and

Reginald A. Malby & Co.]

LOOKING ACROSS THE LAWN IN AN ENGLISH GARDEN

Carrara (white) are making progress. English growers are now propagating hyacinth bulbs instead of buying small bulbs from Holland for growing on; these English hyacinths, in common with all British bulbs, have made notable progress, and there has been built up in England a live and progressive bulb industry.

Anemones.—A striking development has been the increase in anemone production in the west of England since the introduction of tariffs in 1931—this increase being from under 50 to over 400 acres. Improvement in the colour range has been secured by careful selection and by the introduction of named varieties of distinct colours, such as *Hollandia* (scarlet), the *Bride* (white), *Lord Lieutenant* (blue), *Sylphide* (magenta), the *Admiral* (double magenta), these magenta or wine-coloured varieties being recent introductions that have quickly become popular. Research work on anemones has shown the importance of deep cultivation of the soil which should have a definite pH value.

Carnations.—As a florist's flower the carnation ranks only after bulb flowers and chrysanthemums in importance in England. The original varieties were obtained from the United States, but of these only two, *Lady Northcliffe* and *Pink Delight*, are still grown. Of the newer varieties, such as *Purity* (white), *Robert Allwood* (scarlet), *Pelargonium* (fancy), and *Tangerine* have made progress, and exports of these and other promising varieties are being made to the United States. Expansion of the carnation industry continues.

Orchids.—The popularity of orchids has been maintained, and there has been a definite increase in the home production of cymbidiums and cattleyas which were formerly imported in quantity from Belgium. The cypripedium stocks, for long grown in England, have been increased, and cut flowers in large numbers are marketed.

The flowers of the Dominions, which, incidentally, were a feature at the Chelsea Flower Show in 1937, include several which have won a permanent place in English horticulture. *Gerbera Jamesonii* and *Nerines* from South Africa are now important florists' flowers; *Gazania Ursinia* and *Venidium* are popular garden flowers.

Gladioli continue to make headway as florists' flowers, and much of this progress is due to the Canadian workers, who have developed especially the class of primulinus hybrids. *Palmer's Picardy* is now first favourite on the cut-flower market, where *Primulinus gladioli* are in great demand.

Miss I. Preston at Ottawa has introduced some valuable interspecific lily hybrids. Lilies are attracting more and more attention. Specialists are raising bulbs from seed in quantity, and supplies should soon be available to place lilies within the reach of all gardeners.

An important event to flower growers in the United States has been the altered outlook concerning imports of bulbs. In future imports of narcissus bulbs in quantity will be possible, and this should strengthen the bulb-growing industry in the States. Of even greater importance is the withdrawal of the scheme which hitherto fixed a minimum price for the bulbs exported from Holland; this will have world-wide repercussions.

Despite industrial depression, the flower-growing industry in the United States is holding its own. The long-stemmed American rose still leads the world; *Red Hoover* and *Mur-ray* (salmon rose) are new introductions of note. Pot plants continue to gain in importance; the spirea, named varieties of *Saintpaulia*, *Kalanchoe globulifera* var. *coccinea*, the White Easter Greeting dahlia (grown for the Easter market) are among those not known in England. For many years only the white freezia (*Refracta alba*) was known as a florists' flower, but there are now available many improved varieties and many different colours. These include *Elder's Giant White*, *Daffodil* (yellow), *Her Grace* (blue), *Maryon* (lavender), and *Robinetta* (deep red). (H. V. T.)

HOSPITALS. Perhaps the most significant event of 1937 in relation to the hospitals of Great Britain was the publication of the report of the Voluntary Hospitals Commission. Set up under the auspices of the British Hospitals Association, and presided over by Lord Sankey, this commission took into consideration the present position of the voluntary hospitals of the country and made recommendations with regard to promoting their interests and the development of a policy to safeguard their future. This report contained chapters on hospital grading and grouping, on finance, on accommodation for paying patients, the use of out-patient departments, the appointment and payment of medical staffs, on patients' records, and on the nursing, administrative, and auxiliary services. The main conclusion was that unless the voluntary hospitals abandoned their present generally prevailing policy of isolated action and consented to an appropriate form of grouping for purposes alike of clinical usage, of administration, and of finance, their future, except in the case of a small number of well-endowed institutions, was very insecure. Three of the principal recommendations are: (i) The division of the country into hospital regions; (ii) the formation in each region of a voluntary hospital regional council to correlate hospital work and needs in the region; (iii) the formation of a voluntary hospitals central council to co-ordinate the work of the regional councils. Later in the year a committee was formed to consider, and as far as possible to implement, the recommendations of the commission.

On some of the points dealt with in the report, action was taken during the year by particular hospitals or associated bodies. Some schemes for the grouping of hospitals were advanced. Contributory schemes for hospital support were extended and made to accord more closely with that recommended both by the Voluntary Hospitals Commission and by the British Medical Association. Further conferences were held with regard to the establishment and co-ordination of provident schemes for middle-class persons. There was considerable advance in the establishment of fracture clinics and in relation to the rehabilitation of injured workmen. The King Edward's Hospital fund for London, in pursuance of recommendations

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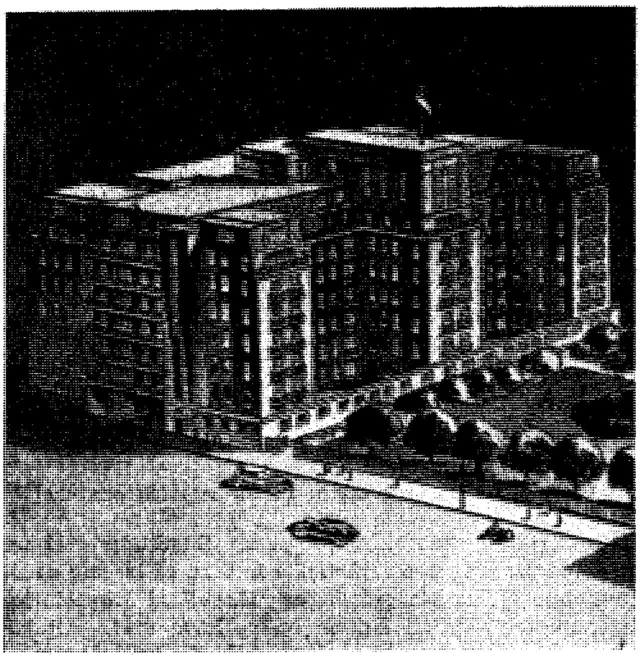
DISTILLED AND STERILE WATER BEING DRAWN IN AN OPERATING THEATRE EQUIPPED WITH THE JESSON-COOK SYSTEM

made a few years ago by its committee on out-patient methods, issued a further very practical report dealing mainly with suggestions: (i) for shortening the interval between the time when patients arrive and the time when they see the doctor; and (ii) with regard to the best system of the registration of patients. A beginning has been made in carrying these improved methods into effect. The Voluntary Hospitals Committee of the County of London adopted a scheme for the centralization of arrangements for the admission of emergency and acute cases to voluntary hospitals. Much concern was aroused by the difficulty of finding suitable recruits for the nursing profession in sufficient numbers, and a departmental committee was set up to consider this matter and, in connexion therewith, the hours of work and conditions of service of nurses in hospitals.

There has been further advance on the part of local authorities in the improvement and equipment of their council hospitals, and in the transference of these institutions from poor-law into public hospitals. The establishment of the statutory committees contemplated by section 13 of the Local Government Act of 1929 is, however, still not general. (H. Br.)

United States.—Hospital building plans in 1937 show increasing attention to functional needs. The requirements of chronic patients other than mental and tuberculosis patients have been studied intensively, and an attempted solution of the problem in large-scale planning has been made by the hospital department of New York City. Out-patients' departments have been improved by more liberal space allowances, and by improvements in diagnostic and therapeutic equipment; the subdivision of large public wards into smaller fixed units or their optional subdivision by means of curtained cubicles has been noticeable. Air-conditioning of operating-rooms, X-ray departments, other special units, and patients' single rooms has been extended. Oxygen therapy as a specialized application of air-conditioning has been more widely used than before. Many rural hospitals now possess adequate laboratory and therapeutic equipment, an improvement promoted by national medical organizations functioning as standardizing agencies. For many years the American Hospital Association has sought adequate means for the training of hospital executives. In 1937 the Hospital Association signified its willingness to relinquish this task to the comparatively new American College of Hospital Administrators. The Hospital Survey of New York recommended the better control and co-ordination of institutions and agencies. A union of professional workers is seeking to enlist physicians and nurses in a single organization with laboratory technicians and pharmacists. In New York City, a stay-in strike by hospital employees resulted in a Supreme Court decision that 'the State and subdivisions thereof may not have their appropriate functions interfered with by strikes, and neither may charitable, educational, nor religious associations or corporations'.



THE NEW BUILDING OF WESTMINSTER HOSPITAL, LONDON, NOW UNDER CONSTRUCTION

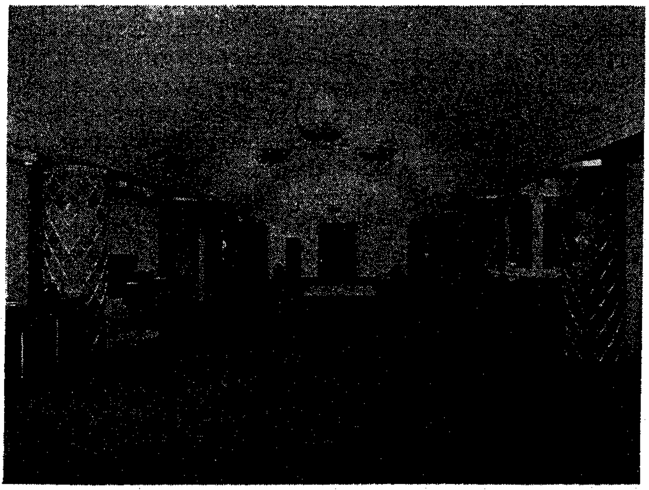
HOTELS, RESTAURANTS, AND INNS. Hotels, restaurants, and inns, which form one of the largest industries in Great Britain, experienced in 1937 exceptional conditions from more than one standpoint. There were two main influences to which this was attributable: (*a*) the coronation; (*b*) the artificial aids applied by certain countries to attract travellers from abroad.

The coronation brought to the metropolis a concentration of visitors, which left little or no unlet accommodation in most of the hotels. This concentration, however, was not spread over a long period, but was largely confined to a few days. Special problems arose for the hotels to consider, among them the organization necessary for the reception, suddenly, of vast numbers of guests, filling the premises to capacity, and requiring special entertainment and attention at a time when excitement and suspense ran high. Elaborate plans were made by many of the leading hotels and restaurants, and much extra expense was incurred. Against this, an increase was made in the standing charges. It was commonly supposed that the influx of visitors meant substantial profits for the London hotels and restaurants, but the shortness of stay and the heavy extra expenditure incurred left the principal companies without any appreciable gain.

In the country, the effect of the coronation was, in most cases, not beneficial, as it drew away so many visitors. This, in itself, would not have been such a serious consequence had normal travel conditions existed during the rest of the year in other European countries. This was not the case, and the influence of depreciated currencies, railway fare reductions, cheap petrol and hotel coupons, and similar attractions, backed by large and persuasive advertising, induced many more people from Great Britain to spend their holiday abroad. This affected more particularly the hotels in the holiday resorts. In contrast, the activity in trade and industry was a stimulant in the case of hotels in the commercial centres. Further, the number of overseas visitors to Great Britain as a whole was greater in 1937 than in the previous year, but many of these visitors, in view of the coronation, made London only their objective, and then visited the Continent, instead of the English countryside and the ancient inns, which normally have a great appeal to visitors from abroad.

The keenness of competition among hotels and restaurants, and the demands made by the travelling public for more and more amenities, showed no signs of diminishing in 1937. Improvements by alteration or addition, or even reconstruction, were undertaken by proprietors in all parts of the country, and a constant replacement of equipment by more modern appliances is part of the regular routine of hotel and restaurant management. The most notable advance was the introduction of a system of air-conditioning, rendering it possible, by the installation of double windows, to make hotel bedrooms noiseless, notwithstanding the situation of an hotel on a main thoroughfare. The advantages of the system, which were applied also to restaurants, include the introduction of clean, pure air and the control of temperature. The Berkeley Hotel, Piccadilly, London, claimed, in 1936, to be the first hotel in Europe to be completely noise-proof and air-conditioned, and in 1937 the Queen's Hotel, Leeds, part of a scheme costing more than £750,000, was planned and built with a completely regulated ventilating system, and was so equipped and constructed as to eliminate, not only all noise from without, but also internal noise as between one room and another, or one floor and another. The hotel also embodied many new and striking innovations in other directions.

Notwithstanding these examples of the progress and enterprise of the hotel and restaurant industry, it cannot be recorded that any notable success was achieved in 1937 in impressing on the public authorities, national and local, the imperative need for modernizing the unsuitable and restrictive laws and conditions to which at present hotels and restaurants in Great Britain are subject.



THE ENTRANCE HALL OF THE NEW QUEEN'S HOTEL, LEEDS, THE LATEST ADDITION TO THE L.M.S. HOTEL GROUP

BIBLIOGRAPHY.—*The Nation's Hosts*, by F. J. Dawson; *Hotelkeepers in Conference*, by leading experts.

(H. W. K. W.)

HOUSING. The year 1937 is perhaps most notable in the housing world for the fact that experts of all European nations and of the United States made the first collective serious investigation into a problem which had become peculiarly menacing everywhere—the question of horizontal or vertical building. Even in England, where the continuous tradition of the single-family house with garden had been, it seemed, firmly entrenched, it was reluctantly accepted as a regrettable necessity that tower development should be allowed, and the London County Council, the biggest English local authority responsible for housing, reversed its policy so that while in 1929 only 5·6 per cent. of the houses erected were flats, in 1937 4,866 out of a total of 7,504 were flats or apartment houses. These apartment dwellings, too, were erected mainly on sites which had to be cleared of old buildings. European and American interest was, therefore, focused on the discussions at the Housing and Town Planning Congress, one of a series organized as part of the *Quinzaine Internationale d'Urbanisme*, held in Paris in July. It was the object of the reports and the discussion to collate the views of many different countries on the initial cost, the management and upkeep costs, and the advantages or disadvantages of different types of housing, each applied to 5,000 persons on 50 hectares (123·5 acres) in single-family dwellings of one or two floors, multi-family dwellings not exceeding four floors, or in tower buildings. Reports were received from Australia, Belgium, Denmark, England, France, Germany, Holland, Italy, Palestine, Poland, South Africa, and the United States. M. Jean Royer of France acted as general reporter, and the trend of the discussion revealed that prevalent opinion was strongly in favour of horizontal development and the single-family house, and that only in exceptional cases should tower buildings be constructed.

This viewpoint was generally welcomed by that large section of housing opinion which regards the flat or dwelling as a lowering of housing standards. Growing discontent in all countries was apparent with regard to ribbon building of houses along main arterial roads, sporadic development, and scattered development, objection being taken not merely on the ground that such development was a menace to natural beauty but that it was expensive and unlikely to provide the occupants of the houses with an adequate social life. For that reason experiments in planned group development have been watched with great interest. The experiment of the United States Resettlement Administration in creating three Greenbelt Towns —described as communities built on raw land, in which every acre is put to its best use, and in which the traditional dividing lines between town and country are broken down . . . each of them surrounded by a broad girdle of park and farmland—is being contemplated throughout the world, and particularly in Europe, with special interest. A modification of the English Garden City idea, the greenbelt town falls short of Howard's ideal only in the scanty provision of zones for industry. A similar departure from suburban peripheral development, now extensively practised but unanimously condemned, is the satellite township of Kincorth, near Aberdeen, Scotland, a competition for the design of which created widespread interest. A rising feeling not only for rehousing but for housing of good quality was symptomatically expressed in this connexion in a strong demand that the houses and public buildings in this new community should be built of local stone, *i.e.* Aberdeen granite.

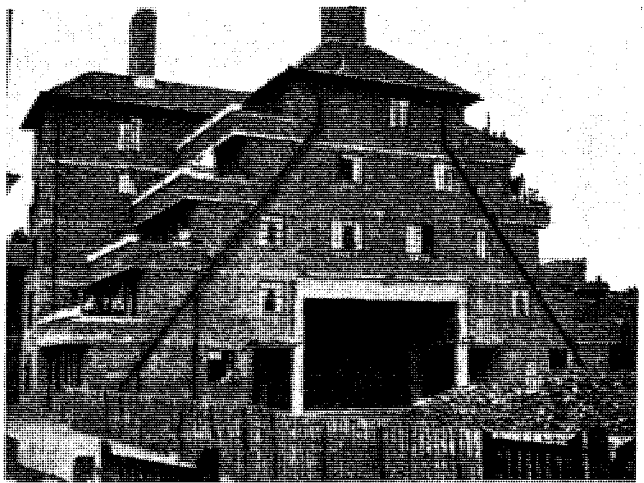
At the same time, there is apparent everywhere a tendency to accept new styles and new materials. In Scandinavia, of course, the building of timber dwellings and pre-fabricated dwellings by the tenants themselves at a cost of £240–£250 goes on apace; but this makes slow, yet significant, progress in Great Britain. Similarly, modern architectural styles in domestic building begin to make their appearance in England—styles which found immediate acceptance on the Continent.

Two other events in Great Britain are worthy of mention as pointing to a growing care for good building. One was the announcement in April 1937 of a scheme by the National Trust, departing in many ways from the successful *La Demeure Historique* system in France, whereby old historic houses may be preserved at the expense of the trust, the owner being allowed to maintain in residence and being exempt from all income tax and death duties. The other was the formation of the National House Builders Registration Council, which, having adopted standard specifications, issues a certificate to house purchasers guaranteeing that the construction is as set out. This move to prevent jerry-building won the approval of the Ministry of Health, but is not yet as widely known to the general public as is desirable.

Central-heating schemes, applicable to detached and semi-detached houses, were started by the city architect of Dundee, Scotland, and designed by Donald V. H. Smith, some fifteen years ago. The total cost of the plant was £59,000, but against this nearly £40,000 was saved by the omission of flues, fire-places, etc., leaving the net cost at £19,000. A report issued in 1937 shows that in twelve years the profit from the undertaking has cancelled more than half the net capital cost. The estates involved were especially scattered, while the charge to householders, namely 2*s.* 8*d.*, represents a substantial economy in heating costs, while supplying constant hot water. The importance of this scheme as a balancing factor in estimating the desirability of cottages as against flat development or apartment development will be increasingly recognized.

In Russia, and particularly in Moscow, efforts are being made to raise the standard of living accommodation to a level similar to that obtaining in English municipal cottages: the Mossoviet is aiming at a standard of 12 square metres per person, *i.e.* 48 square metres (480 square feet) for a family of four. Flats are definitely preferred in Moscow because, say the inhabitants, 'we have always lived in flats and see no reason to change'. Overcrowding is appalling, and in order to reach the standard laid down, a ten-year programme is envisaged totalling fifteen million square metres of accommodation; the 1937 share of this task was one million square metres, an increase of 200,000 square metres over that provided in 1936. The necessary output will have to be increased to two million square metres per year if the programme is to be completed, but in the meantime building is restricted because of war or defence preparations.

This is true of practically every European country, where house building has been seriously affected by the competition in armaments, by the growing scarcity of building materials and even, despite widespread general unemployment, of building labour. This problem will, perhaps, engage the attention of the new International Federation for Housing and Town Planning, formed in 1937 by the linking of the organization of that name with the International Housing Association of Frankfort. Mr. G. L. Pepler was appointed first president of the new organization, which holds its first congress in Mexico City in August 1938, and which has set up administrative offices in Brussels. (F. R. Y.)



Fox Photo]

BLOCK OF FLATS AT HACKNEY, LONDON, WITH DEEP BALCONIES SET BACK. RENTS ARE FROM 10*s.* TO 21*s.* PER WEEK

United States.—The year 1937 saw important developments in the housing history of the United States. The urban demonstration programme of the Public Works Housing Division neared completion. By December, construction was 88 per cent. complete. One project, Techwood, at Atlanta, Ga., had been finished and occupied in 1936. Twenty-five were occupied during 1937, containing altogether 9,948 dwelling units. The remaining 26 by the end of the year were selecting tenants or receiving applications. These 52 projects are situated in 41 communities in 20 States, the District of Columbia, Puerto Rico, and the Virgin Islands. They contain 21,770 small dwellings and flats and are widely distributed among the north-eastern, south-eastern, and central States, but have not reached the West. More than half involve slum clearance with rehousing on the site. In some other cases the city has undertaken to demolish unfit housing units as fit ones were built. Nearly half of the projects are for negro tenants, who suffer from bad housing more than any other group.

Like all other public construction under the Federal Emergency Administration of Public Works, these housing projects have received a 45 per cent. capital grant from the National treasury. The George-Healey Act of 1936 provided that, in the housing projects, the other 55 per cent. of cost should be repaid to the government, principal and interest, out of rents, and that no tenants should be accepted whose family income was more than five times the rent. Standards of layout, construction, and equipment are high. They have been criticized as too high. It is to be hoped that economies may be achieved through further experience and decentralization without sacrificing standards.

Basic rents (comparable with those charged by private enterprise) are generally in the neighbourhood of $5.00 per room per month. Confusion has been caused by the additional $1.00 to $2.00 for service charges not usually included in rent—electricity for light and refrigeration, gas for cooking—or only included in higher-priced apartments as steam heat and hot-water supply. The lowest average rent is $2.24 per room in Caguas, Puerto Rico, with water the only utility. The highest is in New York at Harlem river houses, $7.12 per room per month, including heat in winter and hot water at all times, or $8.52, including also light, refrigeration, and cooking fuel.

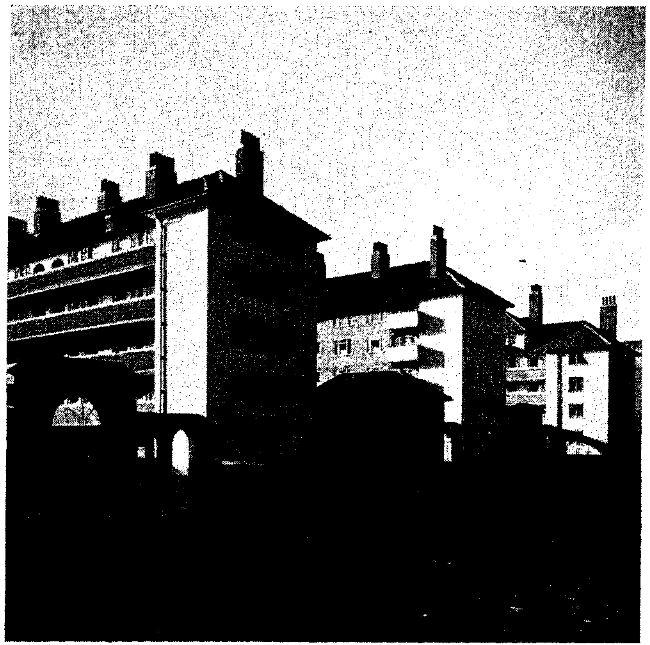
The two New York city projects have been leased to the New York city housing authority for management. Leases have been signed with the Chicago housing authority for the projects in that city, and a number of others are being negotiated. Pending lease or sale to local housing authorities, management is controlled from Washington.

Rural housing built by the Resettlement Administration and its predecessors involves many non-housing considerations. Its three garden suburbs created near Washington, Cincinnati, and Milwaukee are important as object-lessons in enlightened community planning for healthy and pleasant living. Constructed with relief labour, their cost proves only that relief labour is expensive. Greenbelt, the Washington suburb, received its first tenants in September.

The United States Housing Act of 1937, setting up a permanent United States housing authority in the Department of the Interior, was passed in late August. The act embodies the first national public housing policy and programmes for the United States. It provides complete decentralization to local housing authorities of responsibility for initiation, construction, ownership, and management of housing projects. The United States housing authority will set standards, but is essentially a fiscal agency. It will make loans up to 90 per cent. of necessary capital, the remainder being contributed by State or local authority. Loans are to be repaid within an amortization period not exceeding 60 years, with an interest rate not more than 4 per cent. Bond issues to provide money for loans cannot exceed $500 millions in the next three years. Aided projects must either include slum clearance directly or provide for equivalent demolition of unfit dwelling units, except in cases of proved shortage. To assure rents sufficiently low, either a flat capital grant or an annual grant may be made, but not both. In either case, State or local housing authorities must provide 20 per cent.

Congress, desirous of forcing economy, placed a maximum of $1,000 per room on construction cost in towns under 500,000 population, and $1,250 in larger cities. The 5 to 1 ratio of family income to rent is continued, except that families with three or more minor dependent children are allowed a 6 to 1 ratio.

States and cities since 1933 have been preparing for decentralization by State legislation, declaring the clearance of slums and erection of low-rent housing for families of low income to be public purposes. During that period, 61 State and local housing authorities have been appointed. Ten States enacted such legislation during 1937. Eleven others amended earlier laws to bring them in line with the requirements of the national act. Nine States had earlier laws which they have not amended. Therefore, the prompt ' earmarking ' of loans aggregating $136,250,000 to 32 cities and in 16 States is of a provisional character, subject to their being able to make good at their end, and in some cases subject to additional State legislation. (*See* also TOWN AND COUNTRY PLANNING.)



Stewart Bale]

CARYL GARDENS, LIVERPOOL. REHOUSING SCHEME CARRIED OUT BY THE CORPORATION UNDER THE HOUSING DIRECTOR, L. H. KEAY, F.R.I.B.A.

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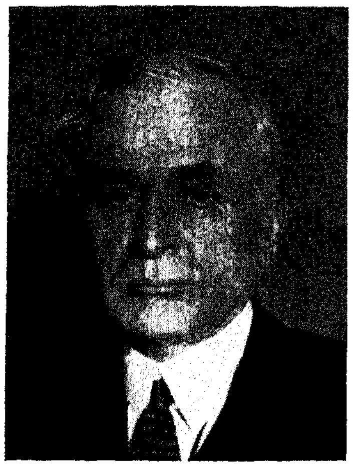
HOWLAND ISLAND, an island in the Pacific Ocean, lat. 0° 49′ north, long. 176° 42′ west, approximately 1,620 miles south-west of Honolulu, Territory of Hawaii, is about two miles long, north and south, a half-mile wide, 18 ft. or 20 ft. high, of coral formation, and with a fringing reef. Since 1936 the island has been under the supervision of the Division of Territories and Island Possessions, United States Department of the Interior. Four Hawaiians have been placed there to obtain meteorological data connected with the possible development of air routes to the southern hemisphere.

HUBAY, JENÖ DE, Hungarian violinist and composer, sometimes known as Eugen Huber; born at Budapest, Sept. 15, 1858; died in Vienna, March 12, 1937. For an account of his musical career and compositions, *see Ency. Brit.,* vol. 11, p. 855.

HUGHES-STANTON, SIR HERBERT (Edwin Pelman), R.A., British artist; born in London, 1870; died Aug. 2, 1937. His father was William Hughes, a well-known flower painter, but Sir Herbert took the additional name of Stanton. His art was self-taught, and he was, from an early age, an exhibitor at the Paris Salon, the Royal Academy, and several other exhibitions. He was elected A.R.A. 1913, and R.A. 1919; and was in 1915 elected a member of The Royal Society of Painters in Water-colours, becoming its president in 1920. In 1923 he was knighted. Sir Herbert's best work was done as a landscape painter in water-colours. His *A Pasturage among the Dunes* was bought for the Chantrey Bequest in 1908, and specimens of his work are to be seen in the Tate Gallery, and in galleries in most of the larger English cities, as well as in the Luxembourg, Rome, Florence, and other European galleries. Sir Herbert married Elizabeth Cobden Rowlands, and had a son and three daughters.

HULL, CORDELL (1871–), American statesman, was born on Oct. 2, 1871, at New Pickett, Overton county,



Wide World Photos]

SENATOR CORDELL HULL

Tenn. In 1907, he began a long and distinguished service in Congress. With one brief interval (1921–23) Mr. Hull was a member of the House. In 1931, Tennessee elected him a senator, a position that he resigned in 1933 in order to become President Roosevelt's secretary of state.

In the domestic field of constructive statesmanship, Mr. Hull is remembered as the author of the Federal income-tax law of 1913 and of its revision in 1916. Internationally his name is associated with the 'good neighbour policy'. In 1933, he enunciated this policy before the Pan-American Congress at Montevideo, and a practical application of the policy has been the negotiation of trade agreements with foreign countries in the Americas and elsewhere. Mr. Hull represented the United States at the London Economic Conference, 1933. In Dec. 1936, he attended the Pan-American Peace Conference in Buenos Aires. On his return, he held conferences with Lord Runciman, president of the British Board of Trade, and in Feb. 1937 secured from Congress an extension of his power to conclude reciprocal trade agreements. In March he had a long correspondence with Germany over a derogatory speech by Mayor La Guardia of New York and the resulting criticisms of the United States in the German press. In April, Mr. Hull received the Woodrow Wilson Foundation Medal, and urged abandonment of competition in armaments as a step towards ensuring peace. With the outbreak of hostilities between Japan and China in early July, however, the international situation grew worse instead of better. Mr. Hull urged withdrawal of U.S. citizens from the war areas, but insisted upon protecting those remaining. The bombing of the *President Hoover* in August and the sinking of the *Panay* in December forced energetic protests from Mr. Hull and made it clear that 1938 would be a year of even greater responsibility for the man who, at home and abroad, had won confidence as a liberal-minded, well-informed, and efficient executive of broad views, expressed with courtesy and discretion.

HUNGARY (*Magyarország*), a kingdom of central Europe and member of the League of Nations. Bounded W. by Austria, N. by Czechoslovakia, E. by Rumania, S. by Yugoslavia. Regent, Admiral N. Horthy. Flag, red, white, and green in horizontal stripes, with crown and arms in centre.

Area and Population.—The area is 35,911sq.m.; population (Dec. 1936) 8,989,000. According to the 1930 census, the habitual language of 89·3 per cent. of the population was Magyar; of 6·8 per cent., German; of 1·7 per cent., Slovak; 64·9 per cent. of the population are Roman Catholics, 2·3 per cent. Uniates, 27·1 per cent. Protestants of various denominations, 5·1 per cent. Jews.

Education is compulsory and universal. It is in the hands, partly of the State, partly of the Churches, which enjoy wide autonomy in this and other respects. The largest cities, with populations as on Dec. 31, 1936, are: Budapest, 1,051,804 (including Greater Budapest, 1,421,397); Szeged, 139,546; Debrecen, 125,337; Kecskemét, 82,329; Pécs, 70,399; Miskolc, 60,415.

Constitution and History.—In the absence of a king, Hungary is governed by a Regent and a Parliament consisting of an Upper and a Lower House. On July 1, 1937, a bill was enacted increasing the powers of the Regent and making provision for the appointment of his successor. A strengthening of the powers of the Upper House is also planned, but a promise has been given that this shall come into force only simultaneously with the bill reforming the suffrage, which is still open outside the large towns. The last-named measure, repeatedly promised by M. Darányi, the present premier, as by his predecessor, was introduced on Dec. 30. The bill provided for secret and direct suffrage for males of 26 and females of 30, subject to qualifications of education (6th class of elementary schools) and residence (at least 6 years in the same commune). Largely in expectation of this measure, internal politics during 1937 were very quiet, the leaders of the Opposition preferring not to press too hard a government which had promised the much-desired reform. A sensation was created on Oct. 10 when M. Eckhardt, leader of the Small Holders Party, declared in favour of legitimism; but this did not bring any nearer the solution of the question of the throne, which the government has consistently declared to be not yet ripe for solution.

The real interest in Hungarian politics centred upon the alleged increase of German and Nazi influence, which was favoured by those who appreciated authoritarian methods, or hoped for German help to recover Hungary's lost territory, but watched with great anxiety by other sections of the population. Several attempted coups, more or less farcical, were crushed during the year. The question of the cultural conditions of the German minority in Hungary also gave rise to exchanges of speeches and views between Budapest and Berlin, which expressed itself officially satisfied. There were warm affirmations of friendship with Austria and Italy, whose king visited Budapest on May 11. In the autumn, negotiations for a *modus vivendi* were attempted with the Little Entente.

Hungary was willing, not to renounce her revision aims, but to put them temporarily into cold storage. She demanded in return recognition of her equality of rights in armaments and a guarantee for the Magyar minorities beyond her frontiers. After dragging on in Sinaia and Geneva, the negotiations had to be postponed until after the elections in Rumania, the country which had found most difficulty in giving the latter assurance.

Trade and Communications.—The basis of Hungary's economic life is still agriculture, in which 51·8 per cent. of the population is engaged. The principal crops cultivated are maize, wheat, potatoes, and sugar-beet. With the rise of world prices Hungary's economic position has improved considerably.

Industry has made a considerable recovery. The index of effective employment surpassed the 1929 figure throughout 1936 and was very little below it in the spring of 1937. The average of industrial activity for 1936 was 133 (average 1925–29, 100). Industrial unemployment has usually varied between 50–55,000.

Hungary's foreign trade has been much hampered by exchange restrictions, and by the absence of an extensive trade agreement with Czechoslovakia, formerly one of her chief markets and sources of supply. A new agreement concluded in 1937 improved the situation only slightly.

The ' Rome Protocol ', concluded in 1934 with Italy and Austria, assured a market for an important part of the Hungarian cereals crop. These had to be modified slightly in 1937, with the result of leaving Germany more conspicuously than ever as Hungary's chief market and source of supplies. In general, however, both imports and exports have shown a tendency to rise. The imports for 1936 were valued at 432,992,000 pengös, and exports at 506,649,000. Thanks to this improvement, Hungary was able in 1937 to resume a fuller service on her public debt, which had been in part suspended.

The monetary unit is the pengö, nominally equal to 17·49 gold cents. There are considerable bonuses on the sale of foreign exchange. The budget for 1936–37 showed receipts estimated at 1,136·1 million pengös, and expenditure 1,211·8 ; the figures for 1937–38 were 1,192·1 and 1,267·8 million pengös respectively.

Defence.—Hungary's defence forces are still limited by the Treaty of Trianon to an army of 35,000, all ranks. In 1936 the budgetary effectives numbered 1,817 officers and 33,209 other ranks. There are also 19,000 gendarmerie, 14,000 police, 4,000 customs guards, and 1,600 river guards. Negotiations begun during 1937 for formal recognition of Hungary's right to equality in armaments have not yet been concluded.

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(C. A. M.)

HUNTER, SIR GEORGE BURTON, British shipbuilder ; born at Sunderland, Dec. 19, 1845 ; died at Newcastle-on-Tyne, Jan. 21, 1937. Connected with various shipbuilding firms since the age of 15, in 1880 he became the chief partner in C. S. Swan & Hunter of Wallsend-on-Tyne, later Swan, Hunter & Wigham Richardson, Ltd., the builders of the Cunard liner *Mauretania.* Sir George was created a K.B.E. in 1918. In 1873 he married Ann Hudson (*d.* 1927), and they had two sons and three daughters. Sir George retired in 1928.

HUNTING. The pony clubs and riding schools, which of late years have come into existence in most hunt areas of Great Britain, are ensuring a continuous supply of recruits to fox hunting. It is generally recognized, by fair-minded veteran followers of hunting, that the younger generation are riding just as well, and behaving in most cases with just the same spirit of decorum, as those long experienced with the sport. On their part, the agricultural community are still giving to hunting all they can to ensure its continuance. Farmers realize full well that several million pounds are spent annually throughout the countryside by hunting people.

In spite of a very wet spell experienced in Great Britain during the 1936–37 season, sport was above average. When the Warwickshire killed their two-hundredth fox on March 9—for the first time in their history, which extends for 150 years—they established a hunt record. The Cattistock, a little later, brought their total up to a hundred brace of foxes, and the Quorn ended their season on March 30 with 64½ brace for 102 days' hunting. The Oakley's figures of 55 brace were above average. The Puckeridge killed 54½ brace, and marked 16 brace to ground in 122 days, and the Beaufort accounted for 163 foxes in 205 days.

Sport and General]

A MEET OF THE DUKE OF RUTLAND'S HUNT NEAR GRANTHAM IN LINCOLNSHIRE

Packs of foxhounds in England and Wales in 1937 numbered 188 ; in Ireland 28, and in Scotland 11—a total of 227. Of harriers, there were 58 packs, made up of 37 in England and Wales, 20 in Ireland, and 1 in Scotland. Staghounds numbered 10, 8 of them being in England and 2 in Ireland. Of draghounds, 12 were in England and 1 in Ireland. Of foot harriers and beagles, there were 71 in England and Wales, 3 in Ireland, and 3 in Scotland. There were also 18 packs of otterhounds in Great Britain, and 2 of Basset hounds. In all, these various British packs numbered 405, compared with 400 in 1936.

There are now 10 European fox hunts ; 18 packs of hounds in India ; 119 in the United States of America ; 2 in Australia and South Africa ; 3 in New Zealand ; 4 in Canada ; 1 in Palestine, and 1 in Iraq. English hounds have helped materially in forming the majority of these packs. Since 1933, hunts in the United States have increased by eight.

Several long-service masters of foxhounds died during the 1937–38 season, including the Earl of Yarborough, Master of the Brocklesby for 56 years ; Mr. John C. Straker, Master of the Tynedale for 54 years ; the Marquess of Abergavenny, Master of the Eridge for 36 years ; Mr. C. Grogan, Master of the Carlow for 16 years ; and Lieut.-Colonel E. W. Griffith, Master of the Flint and Denbigh for 15 years.

(G. T. B.)

HYDERABAD. Hyderabad (Deccan), as it is generally known in distinction from Hyderabad (Sind), is the premier Indian State. Occupying most of the great central plateau of southern India, it has an area of 82,698sq.m.—about the size of Great Britain—and a population of 14,436,148, of whom 84 per cent. are Hindus and 11 per cent. Moslems. The capital city, Hyderabad, with its adjoining cantonment Secunderabad, has a population of 466,894. In connexion with the Government of India Act of 1935, an agreement was made with the Nizam, its ruler (Nawab Sir Mir Usman Ali Khan), whereby his sovereignty over Berar is recognized, but that territory merges in the Central Provinces, forming one governor's province of the Central Provinces and Berar (*q.v.*) ; the Nizam was at the same time given the dignity of His Exalted Highness the Nizam of Hyderabad and Berar, and his heir-apparent became H.H. the Prince of Berar. Hyderabad has an executive council of 8 members, and a legislative council of 20 members with an official majority. In Sept. 1937, the Nizam appointed a committee to advise on more effective association between the people and the government of the State. In March, Sir Akbar Hydari became president of the State executive council, replacing Sir Kishan Prasad on the latter's retirement.

Telugu is the predominant language, Marathi coming second, and Kanarese third. Urdu (Western Hindi, according to the census) is the language of the Moslems of the upper class. There is a fine university (the Osmania), notable for its use of Urdu as the medium of instruction, whereas the

Indian universities teach in English. But the general standard of education is low, only about 7 per cent. of the men and under 1 per cent. of the women being literate in their vernaculars. The State has its own railway system. Wheat, rice, and cotton are the chief agricultural products, the last of these being handled at five cotton mills with about 1,600 looms. About 800,000 tons of coal are raised.

An exhibition of the progress of the State was held in 1937, on the occasion of the Nizam's jubilee. (Me.)

HYDROGEN, HEAVY, is the name applied to the isotope of the element of atomic number 1, having mass of approximately two units. It has been given the name deuterium, and its nucleus is called the deuteron, two terms which are analogous to the names protium and proton for the atom and nucleus of the lighter isotope. The latter two terms are used but seldom, in general the lighter variety being referred to by the term hydrogen. The atomic weights of protium and deuterium are 1·0081 and 2·0148, respectively. The spins of the proton and deuteron are ½ and 1, and the magnetic moments 3·25 and 0·75 nuclear Bohr magnetons, respectively. The ratio of the abundance of hydrogen to that of deuterium in terrestrial sources is about 5,750, but up to the present deuterium has not been found in the sun. It appears that its large abundance on earth is due to some fractionation process such as the loss of the atmosphere of the earth when it was first formed, resulting in an increased concentration of deuterium in the residue. This suggestion is in accordance with our belief that the abundance of hydrogen on the earth is much less than its cosmical abundance.

Deuterium is separated from protium by the electrolytical method discovered by Washburn. This has proved to be the most efficient method for the separation of this isotope, though the distillation and diffusion methods have both been used with success. 'Heavy water' or deuterium oxide is now manufactured commercially and is an article of commerce.

Since the discovery of deuterium in 1931 and particularly since its successful preparation in nearly a pure form in 1933, an enormous amount of experimental information has accumulated. These data cover the fields of spectroscopy, the thermodynamics of isotopic compounds of hydrogen and deuterium, physical properties including the electric, magnetic, mechanical, optical, and thermal properties, and the use of deuterium in chemical kinetic studies of many kinds. Also, the biological effects of deuterium oxide have been investigated and deuterium has been used widely as a tracer in the study of intermediary metabolism. Among the most interesting applications is the field of transmutation reactions.

In the field of spectroscopy it has been found that current ideas of the dependence of spectra on the mass of atoms have proved to be correct in every respect where deuterium has been used to test such theories. This has proved to be true in the case of the molecular spectra of H_2, HD, and D_2, and in general of the molecular spectra of diatomic hydrides.

In the case of polyatomic molecules, the theory has not been so well understood, and deuterium has here served to unravel many difficult points about the structure and spectra of molecules of these different molecules. In the field of thermodynamics again there are many cases of confirmation of previously known theory and an accumulation of a large amount of data where the theory is not so well understood. For the most part the large accumulation of data on physical properties still remains unorganized from the theoretical standpoint, though some attempts have been made in this direction.

Deuterium has proved to be very valuable in the study of chemical kinetics. This is an interesting field of chemistry, since the speed with which chemical transfers take place is an important consideration in the study of that science. It is also a field of very great difficulty, because of the very complex character of chemical reactions and the really detailed information that is required for its understanding. The study of exchange reactions involving hydrogen, *i.e.* reactions in which two compounds, say one containing light hydrogen and the other heavy hydrogen, exchange their isotopes, is that of a very simple type of chemical reaction which has helped to elucidate the mechanisms of many chemical reactions.

The use of deuterium as a tracer in biochemical studies has been important. Deuterium is not an entirely ideal tracer, because its chemical properties are somewhat different from those of hydrogen, and hence there is no certainty, once the course of compounds containing heavy hydrogen in animal organisms has been followed, that this is also precisely the course of compounds containing the light hydrogen.

The deuteron has been found to be one of the most effective projectiles used in modern high-voltage machines for transmutation of elements. The bombardment of deuterium oxide with deuterons gives the most intense source of neutrons known at the present time. Also, high-speed deuterons are most effective projectiles for other transmutations. (*See* MATTER, STRUCTURE OF; ISOTOPES OF THE LIGHTER ELEMENTS, SEPARATION OF.) (H. C. U.)

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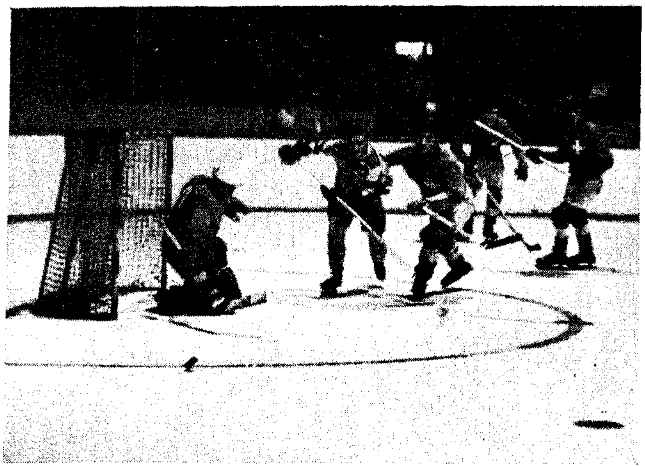
ICE HOCKEY. The world championship was won on Feb. 27 at Harringay, London, by the Kimberley Dynamiters, representing Canada, who beat Switzerland by 2 goals to 1. On the same day, at Wembley, Great Britain secured the European championship by beating Germany, 5 goals to nil. The English (indoors) ice hockey championship resulted in a win for Wembley Lions with 62 points, Harringay Racers being second with 59 points.



Sport and General]

CANADA ATTACKING SWITZERLAND'S GOAL AT HARRINGAY ARENA, LONDON

At the close of the regular season in America, the standing of teams was as follows :

International Group

	Won	*Lost*	*Tied*	*Pts.*
Canadians (Montreal)	24	18	6	54
Maroons (Montreal)	22	17	9	53
Toronto (Maple Leafs)	22	21	5	49
Americans (New York)	15	29	4	34

American Group

	Won	*Lost*	*Tied*	*Pts.*
Detroit (Red Wings)	25	14	9	59
Boston (Bruins)	23	18	7	53
Rangers (New York)	19	20	9	47
Chicago (Black Hawks)	14	27	7	35

The 1937 national amateur championship was held at Boston, Mass., March 27 and 28. Four teams competed, and the Boston Olympics won the title.

ICELAND (Dan. *Island*), island kingdom of north-west Europe, hereditarily united with Denmark, in the North Atlantic Ocean, touching the Arctic Circle. Capital, Reykjavík (seaport; 34,231 in 1935). Ruler, King Christian X (*see* DENMARK). National flag: red St. George's cross, white-bordered, on blue.

Area and Population.—Area: 39,709sq.m., divided into 16 provinces; population (1930): 108,861 (density, 2·7 per sq. m.), predominantly Icelandic and Evangelical Lutheran (State-endowed church; conscience is free). Towns (1935): Akureyri, 4,503; Hafnerfjördur, 3,735; Vestmannaeyjar, 3,510; two others exceeded 2,500.

Education figures (1928–29): 238 (compulsory) elementary schools, 8,709 pupils. Reykjavík has a university.

History, Trade, and Finance.—By Charter (1920; amended, 1934) the King's power is exercised by an executive Council (president, Hermann Jónasson, and two others, 1934), being shared, in legislation, with the *Althing* (not exceeding 49; one-third in upper, two-thirds in lower, house), elected by universal adult suffrage and modified proportional representation.

Only one-seventh of the land is productive (0·25 per cent. under cultivation). Fishing is important. Leading exports: animals and animal products, fish (cod) and fish oil. Imports (food, fuel, etc.; 1935): 45,469,561 krónur (£2,053,000); exports: 47,771,887 (£2,157,000); Great Britain takes 13 per cent.

Currency unit: *króna* (exchange: 22·15 krónur = £1). Budget (1937 estimate): 14,858,000 krónur.

There is neither army nor navy, but two fisheries patrol vessels are maintained (and one by Denmark).

BIBLIOGRAPHY.—T. Thorsteinsson, *Iceland, 1936* (Reykjavík). (H. Fw.)

IDAHO: *see* UNITED STATES OF AMERICA.

IFNI: *see* SPANISH WEST AFRICA.

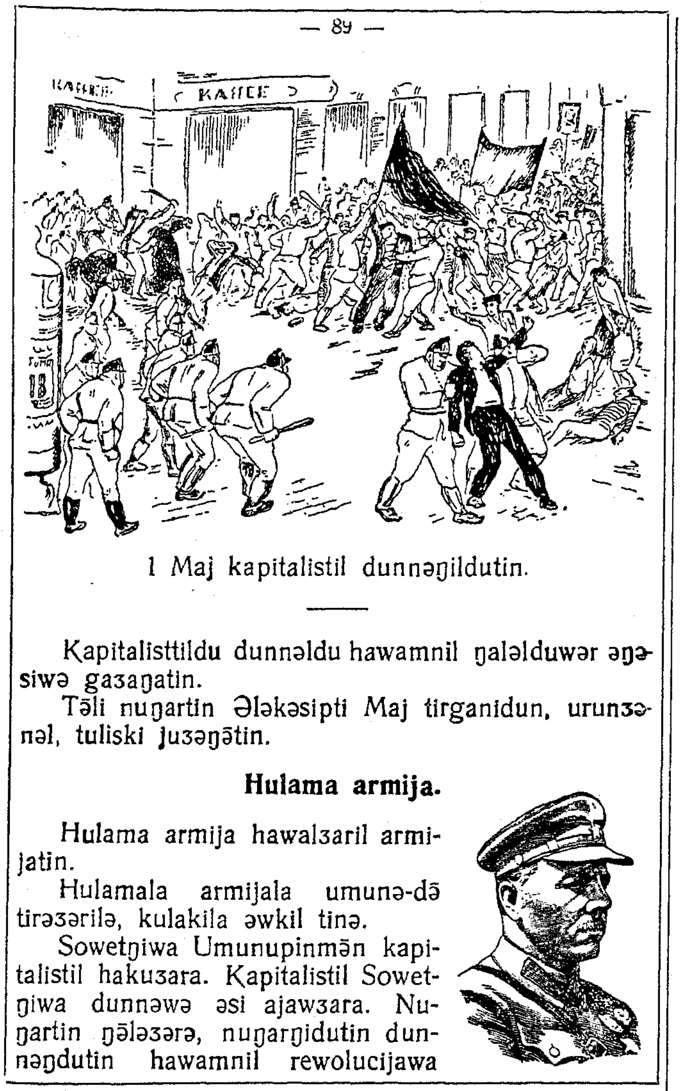
ILLINOIS: *see* UNITED STATES OF AMERICA.

ILLITERACY. During 1937, the nations of the world continued their efforts to reduce illiteracy. This was particularly true of the Soviet Republics, Turkey, and the United States.

The latest statistics available from Russia reveal a

H. M. Smolka]

SCHOOLGIRL OF A REMOTE RUSSIAN TRIBE POINTS TO HER HOME ON THE MAP



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1 Maj kapitalistil dunnəŋildutin.

Kapitalisttildu dunnəldu hawamnil ŋaləlduwər əŋəsiwə gaʒaŋatin.

Tə̄li nuŋartin Ələkəsipti Maj tirganidun, urunʒənəl, tuliski ȷuʒəŋə̄tin.

Hulama armija.

Hulama armija hawalʒaril armijatin.

Hulamala armijala umunə-də̄ tirəʒərilə, kulakila əwkil tinə.

Sowetŋiwa Umunupinmə̄n kapitalistil hakuʒara. Kapitalistil Sowetŋiwa dunnəwə əsi ajawʒara. Nuŋartin ŋə̄ləʒərə, nuŋarŋidutin dunnəŋdutin hawamnil rewolucijawa

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Published by the Educational Publishing House, Leningrad.

PAGE FROM A SOVIET SCHOOL BOOK. THESE PRIMERS DESIGNED TO TEACH THE INHABITANTS OF ARCTIC ASIA TO READ, DESCRIBE NOT ONLY THE LEADERS OF THE RED ARMY BUT THE HORRORS OF LIFE IN 'CAPITALIST' COUNTRIES

decline which has reduced the 75 per cent. illiterate in 1895 to less than 30 per cent. Turkey has similarly advanced under the stimulus of Kemal Atatürk's educational programme, there being but 55·1 per cent. illiterate in 1934 as opposed to 91·8 per cent. in 1927. This improvement makes India and Egypt, with over 80 per cent. illiteracy, the most backward countries from which statistics are reported. British efforts to reduce these figures meet difficulties due to the tremendous number of the uneducated. Of European countries, Portugal and Spain present the poorest records, a fact undoubtedly contributing to the high illiteracy in South and Central American countries. An interesting comparison of national illiteracy standings may be gained from the record of foreign-born whites in the United States. In 1930, 9·9 per cent. of the foreign-born residents were illiterate, with figures as to the nation of origin being reported as follows: Portugal, 34·7; Italy, 25·3; Poland, 19·0; Yugoslavia, 15·6; Turkey, 14·1; Spain, 14·0; Greece, 13·6; Russia, 11·3; Austria, 10·4; French Canadian, 9·9; Hungary, 9·8; Belgium, 6·4; France, 3·8; Germany, 3·2; Netherlands, 3·0; Norway, 2·0; Sweden, 1·5; Ireland, 1·4; Canadian other than French, 0·6; England, 0·6; and Scotland, 0·3. Recent figures to confirm the leading position of Great Britain are not available, as reports were discontinued after 1914, when the number of persons unable to sign marriage registers was under 1 per cent.

The United States possessed 4,283,753 illiterates over 10 years of age in 1930, or 4·3 per cent. of the population of that age. The best record (0·6 per cent.) was established by whites of foreign or mixed parentage, native whites having 1·8 per cent. illiterate, foreign-born whites having 9·9 per cent., and negroes having 16·3 per cent. With two-thirds of the illiterate persons of either foreign or negro parentage, the problem was concentrated in the South and in city slums. Of nine geographical sections only the middle south-east, the south Atlantic and the middle south-west exceeded the U.S. average; while 80 per cent. of the illiterate foreigners were urban dwellers. Both of these problems were met during 1937 by the adult education programme of the Works Progress Administration. In March, there were 241,048 adults studying in 22,779 classes under 5,785 teachers, and officials reported that 700,000 had been removed from illiteracy lists since 1930. The goal for 1940 was a reduction of one million from the 1930 figure, which would place the percentage of illiteracy in the neighbourhood of 2·5 per cent. Up to 1937, this work had cost over $20 millions, but the expense was balanced by the resulting decrease in relief rolls and an increased earning power which was estimated at $100 millions.

IMMIGRATION AND EMIGRATION STATISTICS. Overseas migration on a large scale has occurred only from Africa and Europe to America. The negro slaves imported into America numbered at least 15 millions. The Europeans who have immigrated into America and have not returned total nearly 40 millions. On the other hand, the number of permanent European immigrants into Australia and New Zealand has been, up till now, only about 2,800,000. Of the net overseas emigration of Europeans since 1492, amounting to about 45 millions, something like 24 millions went to the United States, 15 millions to other parts of America, and 6 millions to other continents.

For the British Empire the balance of external migration, as a rule, was unfavourable. The Empire, it is true, gained by emigration from continental Europe (to England, Canada, etc.), but this gain was offset by emigration from the British Isles and Canada to the United States.

AVERAGE YEARLY BALANCE OF MIGRATION, 1861–1936
(In Thousands)

Period	England and Wales	Scotland	Northern Ireland	Irish Free State	Canada	Australia	New Zealand
1861–1871	− 8	− 12	—	− 75*	− 19	+ 17	+ 11
1871–1881	− 16	− 9	− 16	− 50	− 8	+ 19	+ 14
1881–1891	− 60	− 22	− 14	− 60	− 4	+ 38	+ 2
1891–1901	− 7	− 5	− 7	− 40	− 8	+ 2	+ 3
1901–1911	− 50	− 25	− 7	− 26	+ 97	+ 4	+ 9
1911–1921	− 61	− 23	− 5	− 19	+ 49	+ 21	+ 5
1921–1931	− 18	− 40	− 9	− 31	+ 26	+ 31	+ 7
1931–1936	+ 54	+ 1	− 3	− 18	+ 3	− 2	− 3

* 1864–71.

In recent years emigration from the British Empire to the United States has declined much more than immigration into the Empire from continental Europe. As a consequence thereof the Empire's balance of migration became favourable. England between July 1, 1931, and June 30, 1936, had a net immigration of about 270,000.

On the other hand, some countries which usually have a favourable balance of migration witnessed in recent years an excess of emigration over immigration. The United States between July 1, 1930, and June 30, 1937, had a net emigration of about 280,000. France in the quinquennial period ending March 8, 1936, had a net emigration of about 100,000.

The greatest continental migration of modern times, the peopling of Asiatic Russia with Europeans, has not yet come to an end. The same holds true of the emigration of German Jews which started in 1933. (R. R. K.)

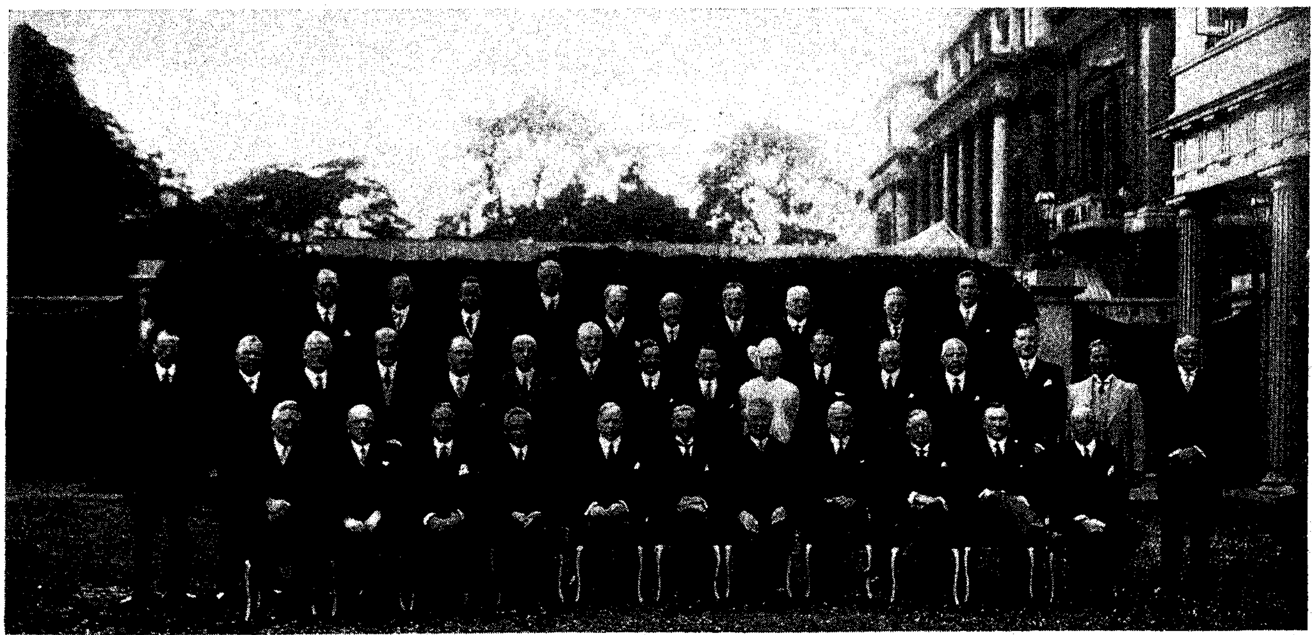
IMMUNIZATION, THERAPEUTIC. The physical basis of immunity to most infections is the presence in the blood of substances inimical to the micro-organism concerned or to the action of its products. When serum (the fluid part of the blood) from an immune animal or man is administered, these substances are furnished already formed; vaccines and other bacterial products stimulate their formation. Changes in the methods used for immunizing animals furnishing serum, besides increasing the potency of many serums of already established value, have for the first time produced one which is effective in typhoid fever. The extended study of pneumococcus types in the United States of America has brought a further proportion of cases of pneumonia within the range of effective serum treatment, and it has recently been asserted that serum of greater potency can be obtained from rabbits in place of horses. Staphylococcus antitoxin has established its somewhat limited value; streptococcal infections have been found so susceptible to chemotherapy that serum treatment, often of questionable value, has been almost abandoned except for scarlet fever. The prophylaxis of measles, which can be either completely prevented or much reduced in severity, according to the amount and time of administration, by serum from human convalescent cases, is becoming more general. The efficacy of this treatment in poliomyelitis remains doubtful.

Active immunization, wherein the formation of protective substances by the treated individual himself is stimulated, has advanced in other directions. Diphtheria is the outstanding example of a disease against which permanent protection can thus be secured, and minor improvements have been made in the already very effective reagents available for this purpose. It is now known that active immunity can also be produced to tetanus; the method is likely to be applied in future to troops engaged in land warfare. The usefulness of many bacterial vaccines is still disputed; they are of established value in preventing enteric fever, and the conditions necessary for preparing effective vaccine for this purpose are now better understood. Recent evidence strongly favours their use in preventing whooping-cough. Attempts to isolate the 'essential immunizing fraction' from bacteria give promise of better future results, perhaps in a wider field. Among virus infections, yellow fever has joined smallpox, rabies, and canine distemper as a disease for which an efficient prophylactic is available; on the other hand, some attempts made in the U.S.A. at active immunization against poliomyelitis have had disastrous results. Influenza virus vaccines are in the early stages of trial, and although some favourable results have been reported, the problem of preventing both influenza and the common cold remains among the most formidable, especially on account of the multiplicity of microbic agents causing them. (L. P. G.)

IMPERIAL CONFERENCE. The Imperial Conference of 1937 was held in London immediately after the Coronation of King George VI, from May 14 to June 15. It was the first Imperial Conference since 1930, barring the Imperial Economic Conference held at Ottawa, Canada, in 1932.

The heads of delegations were: United Kingdom, Mr. Stanley Baldwin, succeeded by Mr. Neville Chamberlain when the latter became prime minister on May 28; Canada, Mr. W. L. Mackenzie King; Australia, Mr. J. A. Lyons; New Zealand, Mr. M. J. Savage; Union of South Africa, General J. B. M. Hertzog; India, the Marquess of Zetland. Excepting Lord Zetland, who was secretary of State for India in the United Kingdom cabinet, all the above were prime ministers of their several countries. Southern Rhodesia and Burma were represented by observers, their respective chief delegates being Mr. G. M. Huggins, prime minister, and Dr. Ba Maw, chief minister.

The Conference was occupied mainly with questions of foreign policy and defence. Though its publicly announced



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THE MEMBERS OF THE IMPERIAL CONFERENCE AT LONDON. MR. NEVILLE CHAMBERLAIN IN THE CENTRE conclusions on these questions (*see Summary of Proceedings of Imperial Conference,* 1937, Cmd. 5482) were not remarkably novel or clear-cut, the discussions were recognized to have secured a valuable measure of mutual understanding, in the light of the world conditions that had arisen since 1930, particularly general rearmament and the difficulties of the League of Nations. 'Emphasis was laid on the importance of developing the practice of communication and consultation between the respective governments as a help to the co-ordination of policies'.

The delegates, while entering into no definite commitments, and while reserving the right of their governments to uphold their different statements of policy regarding the future of the League of Nations made at Geneva in Sept. 1936, 'found themselves in close agreement upon a number of general propositions'. These may be summarized as follows. The first objective of each member of the British Commonwealth was the preservation of peace. The settlement of international differences should be sought by methods of co-operation, joint inquiry, and conciliation, in which, rather than in recourse to force, lay the surest guarantee for better international relations and the keeping of treaties. The armaments of the Commonwealth nations would never be used for aggression or for any purpose inconsistent with the League Covenant or the Pact of Paris. The needed enlargement of the membership of the League would be facilitated by separating the Covenant from the Treaties of Peace. Regional agreements of friendship and collaboration were welcomed in so far as they could be made to contribute to the cause of peace and did not conflict with the League Covenant. An Australian proposal for a regional understanding and pact of non-aggression among the countries of the Pacific was approved in general terms. While the governments represented wished earnestly for the widest possible measure of disarmament, they held themselves bound to adopt measures of defence essential for their security and for the fulfilment of their international obligations. In order to assist in reviving confidence and increasing economic and financial stability, they declared themselves ready to co-operate with other nations in examining current difficulties, including tariffs and other barriers to world trade and a higher standard of living. Finally, while themselves firmly attached to the principles of democracy, they held that differences of political creed should be no obstacle to friendly relations between governments and countries, and that nothing would be more damaging to hopes of peace than the division of the world into opposing groups.

The statement was interpreted as opposing a rigid interpretation of the sanctions aspect of the League's function, and as favouring an attempt at a settlement with Germany and other Powers.

The discussions on defence, as publicly revealed, consisted mainly of an exposition of national policies. The Conference also 'considered ways in which it would be possible fort he governments concerned to co-operate in measures for their own security'. It was noted that Dominion representatives could always attend meetings of the Committee of Imperial Defence in London when matters affecting their countries were under consideration. Progress was reported in the adoption of a common system of defence organization and training and the use of uniform manuals, patterns of arms, equipment, and stores throughout the Commonwealth. Each member nation 'would thus be enabled to ensure more effectively its own security and, if it so desired, to co-operate with other countries of the Commonwealth without delay'. Stress was laid on the advantages of co-operation in the supply of munitions and raw materials, as well as of food and feeding-stuffs, to the different countries of the Commonwealth, and it was agreed that technical discussions on these lines should continue, subject to governmental freedom on issues of policy. The several governments, it was noted, were aiming to create and maintain an adequate chain of air bases and re-fuelling stations along the lines of communication between the different parts of the Empire. Other means of co-operation that were noted included the interchange of naval, military, and air force officers, and the education of officers at the Imperial Defence College in London. The Conference agreed that by such means, by the concerting of the scale of the defences of ports, and by co-operation in the defence of communications and other common interests, the security of each of the member countries would be increased. At the same time it recognized that the several parliaments were solely responsible for deciding their own national defence policies.

The Conference was not called upon to consider detailed economic issues, such as the amendment of the Ottawa trade agreements. As a result of its general economic discussions, it declared that 'in the last resort the prosperity of the countries of the Commonwealth depends on that of the world as a whole, and that a healthy growth of international trade, accompanied by an improvement in the general standard of living, is an essential step to political appeasement'.

In the constitutional field, the Conference took note that the forms of the Coronation Service, particularly the wording of the Oath, had been adapted in consultation to accord with the new constitutional relationships in the Commonwealth. It accepted reports of a committee on nationality questions, treaty procedure, and the nationality of married women. 'It was in no way suggested that any change should be made in the existing position regarding the common status . . . described by the term "British subject". The term does not, of course, mean a "subject of Great Britain". It is one of long standing, as denoting generally all subjects of His Majesty, to whatever part of the British Commonwealth they belong.' The committee concluded that it was for each member nation to decide which persons it would regard as its own citizens, but that uniformity and avoidance of overlap were desirable.

The further work of the Conference included a review of colonial affairs, the acceptance of a report from the Imperial War Graves Commission, the adoption of resolutions on the promotion of civil aviation and on relations with foreign air services, and the consideration of the future of the Imperial Shipping Committee and other shipping questions, the future of the Imperial Economic Committee, and co-operation in polar research. (H. V. H.)

INCOME-TAX. Taxes on income were first imposed in Great Britain by William Pitt in 1799, but abrogated between 1815 and 1842, since when such a tax has been continuously in force. Immediately before the World War, the standard rate was 1*s.* 2*d.* in the pound, but since 1918 it has never fallen below 4*s.* (1925–30), and in 1918–22 it stood at its highest figure of 6*s.* in the pound. At present (1938), the standard rate, as fixed by the Budget of 1937, is 5*s.* in the pound.

Taxation is assessed on 'assessable income', which is the actual amount of income, less one-fifth of the amount of 'earned' income up to a maximum deduction of £300 for one person. Persons of 65 and upwards whose total income does not exceed £500 may likewise deduct one-fifth of their 'unearned' income for assessment purposes. Those whose total income does not exceed £125 are wholly exempt from the tax.

Deductions from the assessable income are allowed as follows in order to ascertain the 'taxable income': (1) A personal allowance of £100 or, if the taxpayer's wife is living with him, £180. (2) Four-fifths of the amount of any income earned by the wife, such additional allowance being limited to £45. (3) An allowance of £60 for each child (including step-children and adopted children) under 16, or over that age if receiving full-time educational instruction, provided the child has not in its own right an income exceeding £60 per annum. (4) An allowance of £50 to a widower or widow who has living with him or her a female relative (or under certain conditions a non-related female) as housekeeper or as guardian of children. (5) A similar allowance to an unmarried person who has living with him his mother or other female relative in charge of his brothers or sisters being children. (6) In certain circumstances, an allowance of £25 in respect of an infirm or incapacitated relative, a widowed mother-in-law, or a daughter who attends on the taxpayer.

The taxable income, thus arrived at, is chargeable at one-third of the standard rate of tax (*i.e.* at present at 1*s*. 8*d*. in the pound) in respect of the first £135, the whole of the remainder being taxable at the full standard rate. Certain deductions are allowed in respect of life assurance premiums.

In addition to the income-tax thus payable, sur-tax is charged on incomes exceeding £2,000. Sur-tax is payable on Jan. 1 of the year following the income-tax year (which latter extends from April 6 to April 5). The sur-tax rates for the year 1936–37 (payable in 1938) are as follows:

For the first	£500 in excess of £2,000	1*s*. in the pound.
For the next	£500	1*s*. 3*d*. ,, ,,
For the next	£1,000	2*s*. ,, ,,
For the next	£1,000	3*s*. ,, ,,
For the next	£1,000	3*s*. 6*d*. ,, ,,
For the next	£2,000	4*s*. ,, ,,
For the next	£2,000	5*s*. ,, ,,
For the next	£5,000	5*s*. 6*d*. ,, ,,
For the next	£5,000	6*s*. ,, ,,
For the next	£10,000	6*s*. 6*d*. ,, ,,
For the next	£20,000	7*s*. ,, ,,
For the remainder	. . . .	7*s*. 6*d*. ,, ,,

Generally speaking, taxpayers who reside outside the United Kingdom can claim no reliefs or exemptions, unless they are British subjects, present or past servants of the Crown or their widows, persons residing abroad for reasons of health, or those living in the Isle of Man or the Channel Islands; but relief is given in respect of income which is subject to income-tax both in the United Kingdom and in a British Dominion.

Tax on earned incomes is payable half-yearly, on Jan. 1 and July 1; tax on unearned incomes is payable in one instalment on Jan. 1, as is tax payable by companies, which are not granted an allowance for earned income. Weekly wage-earners, other than clerks, typists, and similar employees, are assessed half-yearly and pay half-yearly.

The income of a wife living with her husband is considered for tax purposes as a part of his own; but children are separately assessable. Certain forms of income, including war pensions, scholarship income, interest on National Savings certificates, gifts (other than voluntary pensions), and profits from the sale of capital assets, are exempt from liability to tax.

The 1937 Finance Act provides that any amount payable as 'National Defence Contribution' is allowable as a deduction from income for purposes of income-tax.

In the case of investment income, tax is usually deducted at the source, and if the tax so deducted exceeds the taxpayer's total liability, he may recover the excess tax so paid. Claims for adjustment of tax may also be made in the event of business losses.

The receipts from income-tax and sur-tax in 1936–37 were £257,237,000 and £53,540,000 respectively; for 1937–38 they are estimated at £288,150,000 and £58 millions respectively.

United States.—Recent income-tax development has been in the direction of: (1) increasing the rôle of the tax; (2) modifying the basis for the corporation income-tax; and (3) enhancing the effectiveness of income-tax administration.

Federal income-tax collections in the fiscal year ended June 30, 1937, amounted to $2,149 millions or 41·8 per cent. of the total Federal internal revenue and customs. Individual and corporate income-taxes shared approximately equally in this total. In other years, the collections from corporations generally exceeded those from individuals. State collections from these sources for the fiscal year 1937 are estimated to have amounted to nearly $300 millions or approximately 10 per cent. of State receipts.

Tax on Individuals.—The Federal Government's individual income-tax consists of a 4 per cent. normal tax and a sur-tax ranging from 4 to 75 per cent. applicable to incomes over $4,000 after allowance for exemptions and credits. The personal exemptions allowed for both normal and sur-tax purposes are at present $1,000 for a single person, $2,500 for married persons and $400 for dependants. The earned income credit, applicable against the normal tax, is at a rate of 10 per cent., allowable only on amounts of earned income not in excess of $14,000, with $3,000 of income considered earned whether or not actually earned. These provisions serve to exempt single individuals with net incomes of $1,111 or less and married persons of $2,778 or less, if without dependants, and restrict income-tax liability to comparatively few individuals—2,110,890 in 1935.

Income-tax data for 1935 show that nearly 60 per cent. of the total net income reported by individuals was received by persons having less than $5,000 net income each, and 92·6 per cent. by persons having less than $50,000 net income. On the other hand, owing to the operation of the exemptions and the progressive sur-tax rates, persons with less than $5,000 net income paid 6·1 per cent. of the total individual income-taxes collected, and persons with less than $50,000 net income, 45·6 per cent.

A general income-tax upon individuals is levied by 29 States. Five additional States tax particular sources of income. In all but one of the aforementioned 29 States, the rates are progressive, ranging from a minimum of 1 to 3 per cent. to a maximum of 3 to 15 per cent. In addition, 5 of these States impose sur-taxes at various rates. The maximum State income-tax rate, including both normal and sur-tax, is 29 per cent. On the whole, State income taxation is directed towards the low income groups, as is evidenced by the fact that the exemptions are below the Federal level in 12 out of 29 States in the case of single persons, in 19 States for married persons and in 21 States for dependants. Although some of the States preceded the Federal Government in employing the income-tax, more than half the States now imposing it adopted it in 1929 and following years.

Tax on Corporations.—Federal corporate income-tax rates are graduated from 8 to 15 per cent., the top rate applying to the portion of income in excess of $40,000. At the close of 1937, general corporation income-taxes were also levied by 32 States, the rates usually ranging between 2 and 6 per cent. Six of these States, like the Federal Government, imposed graduated rates—the other 26, flat rates.

In the past few years the basis of corporate income taxation by the Federal Government has been undergoing a process of modification. Until 1936, ordinary dividends distributed by domestic corporations were exempt from normal individual income-tax (though not from sur-tax), indicating that in part at least the corporation income-tax was regarded as a personal income-tax at source. In 1936, however, dividends were made subject to the normal individual income-tax, as well as to the sur-tax. In addition, Federal corporation income-tax rates were graduated for the first time. Further, dividends received by corporations were made taxable to the extent of 15 per cent. These innovations may indicate that the normal corporation income-tax is now viewed by the Congress as essentially a corporate privilege tax rather than as an integral part of the personal income-tax.

The States appear to have been in the forefront of the development towards the conception of the corporation income-tax as a privilege tax. They were first in adopting graduated rates and developing and continuing the practice of taxing dividends under their individual income-taxes. At present 19 States, including New York and California, tend to divest the corporation income-tax of personal elements by subjecting dividends to individual income-tax rates, even though distributed by corporations subject to their own corporation income-taxes.

In addition to the corporation normal income-tax, the Federal Government in 1936 enacted a sur-tax on the undistributed profits of corporations, with rates graduated from 7 to 27 per cent. and dependent upon the degree of distribution of the profits. Under the individual income-tax law in the United States, the profits of corporations are taxable to shareholders only as they may be distributed and received in the form of dividends, whereas the profits of proprietorships and partnerships are taxable to the individual owners irrespective of distribution. The main objectives of the new undistributed profits tax were to provide needed revenue, and to make the individual income-tax apply more uniformly as between corporate equity owners with interests in undistributed profits and those directly participating in businesses organized as proprietorships or partnerships.

From the inception of the income-tax in the United States, efforts have been made to safeguard against tax avoidance through the use of corporations. From 1913 to 1920, the undistributed profits of corporations formed or availed of to prevent imposition of personal sur-taxes were made taxable to the shareholders. In the Revenue Act of 1921 and later acts, this provision was replaced by a special tax upon such corporations. In 1934, these provisions were supplemented by sur-taxes on personal holding or 'private' companies as therein specifically defined. In 1937, the rates on such companies were increased to 65 per cent. on the first $2,000 and 75 per cent. on the balance of undistributed income, and the provisions relating to such corporations were generally overhauled to minimize the avoidance of the individual sur-tax rates through this device. This was done through the disallowance of deductions attributable to such items as 'incorporated yachts', 'incorporated personal talents', and artificially created losses, interest charges, or business expenses. Further, the road to tax avoidance through the organization of foreign personal holding companies was blocked by requiring individuals to report for income-tax purposes their pro rata shares in the profits of such companies irrespective of whether distributed or not.

In order to make more effective the administration of the income-tax applicable to non-resident aliens and non-resident corporations and to equalize taxation between them and residents of the United States, the provisions pertaining to the taxation of non-residents were revised in 1936 and again in 1937. These revisions replaced the regular normal tax and sur-tax on income from sources within the United States, in the case of individuals, with a flat withholding rate of 10 per cent. on specified sources of fixed income (5 per cent. under treaty with Canada) where the income of the non-resident was $21,600 (the point at which the effective rate for citizens and residents is 10 per cent.) or less; non-resident alien individuals with net incomes in excess of $21,600 are taxable at the normal tax and sur-tax rates applicable to citizens and residents. In the case of foreign corporations having no office or place of business in the country, a flat withholding rate of 15 per cent. on specified sources of fixed income (10 per cent. on dividends, except Canada, 5 per cent.) is applied.

INDEPENDENT LABOUR PARTY, THE. The I.L.P.'s membership increased somewhat during 1937, and the party has now some 12,000 members and over 350 branches, principally in the west of Scotland, Lancashire, Yorkshire, and South Wales. Its political influence is considerably greater than is reflected by its numbers, for its four M.P.'s—Messrs. Maxton, Buchanan, McGovern, and Stephen, all from Glasgow—affect the debates in the House of Commons, and conditions in the trade unions and throughout the country, not merely by their interventions, but by the pressure they bring to bear on the Labour Party.

No parliamentary by-elections were fought, but a net gain of about 8 seats was recorded in municipal elections, principally in Glasgow and Bradford. At a conference on Jan. 18, the I.L.P. decided to establish a 'Left Wing United Front' with the Communist Party and Sir Stafford Cripps's Socialist league, though expressing disagreement with the Communist policy regarding the League of Nations. On June 3, the United Front collapsed on the disbandment of the Socialist league; and in November the Communist Party declared that it could not further co-operate with the I.L.P. by reason of the latter's 'disruptive tendencies' and Trotskyist sympathies, which objectively helped Fascism. The I.L.P. is associated with the International Bureau for Revolutionary Socialist Unity, which acts as a link between Socialist groups in over 20 countries. (L.H.D.)

INDIA, a sub-continent projecting from the mainland of Asia, lies between the 8th and the 37th degrees of north latitude. It comprises 11 major or 'autonomous'. provinces, 5 minor areas directly administered by the central British Government, and a large number (between 500 and 600) of States under Indian rulers. The latter are scattered about the sub-continent, and vary greatly in size and importance, as well as in the powers enjoyed by their chiefs. British India (the 16 major provinces and minor areas) has its capital at Delhi, and is under a viceroy and governor-general (the Marquess of Linlithgow since April 1936), who is also the representative of the Crown in its relations with the States.

Area and Population.—The total area of India (from which Burma has now been separated) is 1,575,187sq.m., and its population (1931 census) 338,170,632. Males exceeded females by over 10 millions. There are 862,679 sq.m. and 256,859,787 souls in British India, while in the States there are 712,508 sq.m. and 81,310,845 souls—a striking divergence in the density of population. Between the census of 1921 and that of 1931, the population had grown by nearly 32½ millions or 10·6 per cent.; the birth-rate of recent years being in the neighbourhood of 34 per thousand, and the death-rate about 23. British rule may at least claim the credit of having mastered the terrible famines and epidemics of earlier days.

Religion and Language.—In the matter of religion, Hinduism claims 239 millions and Islam 77 millions: there are roughly 7⅝ millions of Animists, 6 million Christians, and 4⅓ million Sikhs; the Parsees, though important in business, being a small community of barely over 100,000. India is sometimes described as a land of 200 languages; but the statement is misleading, as many of the diverse tongues are merely tribal dialects spoken on the Assam and Burma frontiers. Of the others, however, 23 are important enough to be spoken each by over 100,000 people; and there are at least a dozen distinct alphabets. The largest linguistic group is formed by variants of Hindi, spoken by 108 millions; and Bengali comes next with 53 millions. Urdu (or Hindustani) is an admixture of Persian and Hindi origin widely spoken, and understood more widely, over northern India, besides being a useful *lingua franca* in other parts of the country. The statistics of literacy are not too trustworthy; but at the 1931 census 1 male in every 7 and 1 female in every 56 were returned as literate in their own vernacular; while 1 man in 42 and 1 woman in 430 were acquainted with English.

Calcutta, the capital of India until Delhi was given that dignity in 1911, is the most populous city in India (pop. 1,485,582 in 1931) and the second largest in the British Empire. Next in importance come the two old Presidency towns, Bombay (1,161,383) and Madras (647,230). There are 10 other cities with a population of over quarter of a million each, and 26 others with between 100,000 and 250,000 inhabitants. This sufficiently indicates how small a fraction of the total is the urban population.

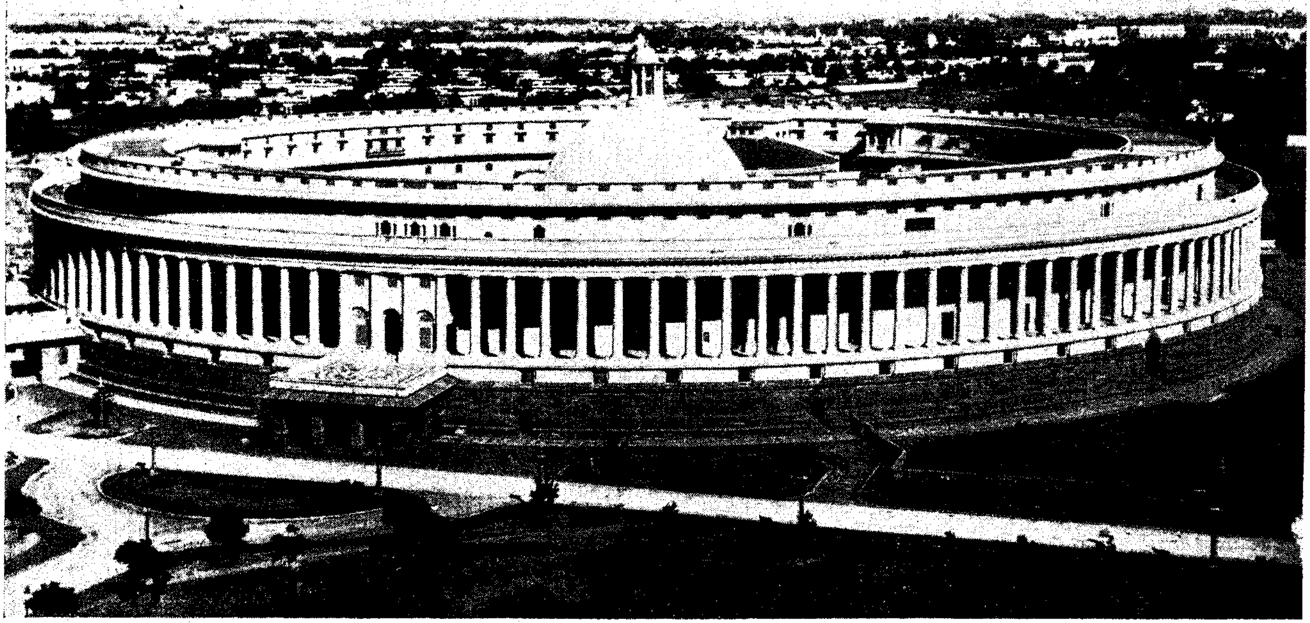
History.—In 1937, a new page was opened in the history of India. The constitution which, enacted by the British Parliament in 1935, came into operation in April, 1937, is in some respects admittedly transitional; but it gave self-government to the peoples of India, and self-government is what they had never enjoyed before. There had rarely been lacking Englishmen with the vision to see that the goal of British rule must be the preparation of Indians to manage their own affairs; but the troubled history of the country, the internal dissensions among its peoples, and their inexperience of free institutions in almost any form, had long stood in the way. For an account of the earlier steps taken to approach this goal, *see Ency. Brit.*, vol. 12, pp. 200–203. A Parliamentary commission was opened in 1928 under Sir John Simon; and after seven years of intensive discussion and negotiation, including three round-table conferences in London, the present constitution was passed into law.

Its outstanding features are fourfold: (1) For the central government of India a federation is to be established, comprising the provinces and those States which accede to the arrangement. There will be a federal legislature of two chambers; and from it will be drawn ministers to form the governor-general's cabinet and to conduct the government of all-India in respect of federal subjects. (2) Each of the major provinces has an elected legislature (in six cases bicameral, in the others not), from which ministers are drawn who form the governor's cabinet and conduct the government of the province in respect of provincial matters. The fields of all-India and of provincial administration are defined by the Act, and the powers which the rulers of States do not agree to transfer to the federation will be reserved to them in their Instruments of Accession. (3) Notwithstanding the above, the defence of India, its ecclesiastical affairs, and its external affairs except its relations with other parts of the British Empire, are retained in the hands of the governor-general and are not subject to either the federal or the provincial administrations. (4) There are certain 'safeguards', or emergency powers, enabling in effect the governor-general and the governors, in their respective spheres, to overrule their ministers when urgently necessary in the interests of public order or good government.

Indian State Railways]

GWALIOR FORT. GENERAL VIEW OF THE MANSINGH'S PALACE

Agitation for political rights had long outrun constitutional advance; and the Act of 1935, although it probably gave the Indian politician more than he had ever expected, was stigmatized by the Congress (advanced Nationalist) party as unacceptable and an insult to Indian aspirations: a minority of the party contending that nothing would satisfy them except the complete severance of the British connexion with India. When the general elections, however, were held for the new legislatures in Jan. and Feb. of 1937, the Congress threw its whole weight into the contest, with the result that its superior organization and political vitality secured a remarkable triumph, and its adherents obtained a majority of the seats in six out of the eleven provinces. There was no obligation to summon the new legislatures before Oct. 1; so the governors had time to



Planet News]

AN AERIAL VIEW OF THE HOUSE OF ASSEMBLY IN DELHI, INDIA

form their cabinets, a task of some delicacy in the provinces dominated by the Congress. Minority governments were got together in these six provinces, the Congressmen refusing to take office except on terms which would have been incompatible with the Act. Eventually, in some measure under Mr. Gandhi's influence, the Congress weakened and the governors were able to man their cabinets, in every province, with representatives of the majorities in their legislatures. The new governments were thus in full working order everywhere before the year ended ; and there were indications that the sense of ministerial responsibility and of patriotism was on the way to modify the fiery creed of non-co-operation which prevailed while Congress was exclusively on the offensive.

The establishment of the new central government did not fare so well. In the mood of exaltation which characterized that gathering, the Princes who attended the first Round Table Conference had acclaimed the idea of a federation. As practical details emerged, the romantic vision of a united India began to fade ; and the limitations on the old autocratic powers of the Princes, which would be entailed by membership of a federal super-State, came into unwelcome prominence. At the same time, the Congress opened an attack on the principle : they would have no partnership with effete systems of personal rule : they would agree to a federation of democratic provinces, but to nothing more until the States had been granted popular government. In these circumstances, the federation clauses of the new constitution have not yet become operative. They require the voluntary adhesion of the rulers of at least half the total population of the States ; and there is no immediate prospect of this being secured. Meanwhile, the central government is in the anomalous position of working on the old lines of an irremovable executive yoked to an irresponsible legislature. An important step, however, was taken in the inauguration (Dec. 1937) of a Federal Court, with an eminent British jurist, Sir Maurice Gwyer, as its first Chief Justice. The Court has original jurisdiction in disputes between members of the Federation or between the Federation and any of its units. It has also appellate jurisdiction from any Indian High Court, upon certificate from the Court concerned, in cases involving a substantial question of law as to the interpretation of the Constitution. It is probable that ultimately a much wider appellate power will be conferred on the Court.

By the end of 1937, Indian ministers had hardly been long enough in the saddle to develop their administrative programmes in detail ; but several interesting measures had been taken in pursuance of the social reform which was promised in the election manifesto of Congress candidates. Two of those steps have already led to trouble, in the agricultural field and the labour field. The agrarian policy in most provinces aims at the reduction of tenants' rents and their protection from ejectment : in provinces where the landlord system prevails, this has seriously unsettled the agricultural population, while it threatens everywhere to undermine provincial finance, which owes much of its stability to the land revenue. Similarly, the Congress policy of improving the conditions of industrial labour has borne some of its first fruit in widespread strikes and labour unrest. The mills at Cawnpore suffered, in spite of efforts of the Congress ministry to reason with the strikers. In Calcutta also a strike movement was active. A less controversial plank in the Congress platform is prohibition ; and the Madras government has introduced it experimentally in one district. Here also the financial reaction will be considerable, as the excise revenue is no unimportant feature in provincial budgets. Finance generally will impede the pace at which nationalist politicians would fain develop their ' nation-building ' services.

The government has taken control of broadcasting, and has organized an all-India Radio, intended to supply services in the chief vernaculars for the whole country ; but at present only one inhabitant in 7,000 has a wireless licence. A short-wave relaying service for foreign transmission is being installed at Delhi. The film industry is making rapid advance, but is handicapped by shortage of capital. There are over 100 production companies, but only 700 cinemas in the whole country.

In external politics there was nothing eventful during the year. Indian sentiment was gratified by the election of H.H. the Aga Khan to preside over the League of Nations Assembly in Sept. 1937. The central legislature repudiated the Ottawa agreements so far as they affected India, and negotiations for a trade pact to replace them were in hand at the end of the year. The action of Japan in China is being watched with some apprehension. It has for the moment allayed the outcry of the extremists against the British army in India as an extravagant agency for work which could equally well be done by an Indian militia.

Agriculture and Minerals.—Agriculture naturally has pride of place in India's economic structure. The world depression, with its disastrous effect on the price of his produce, hit the Indian peasant very hard, and recovery, though it had started, was only partial in 1937. The slump, however, made no material change in the regular routine of seed-time and harvest: wheat, for example, though its export fell to about one-tenth of its former magnitude, continued to be the staple crop of northern India, covering an acreage of from 25 to 28 millions. Rice, however, with its wider range, and the tall millets which are grown for local consumption, occupy about 80 million and 40 million acres respectively. Oilseeds account for about 18 million acres, and cotton for 14 to 16 millions. The area under jute has declined with the serious set-back experienced by the industry, and operations in the tea gardens have been curtailed by the agreement with Ceylon and Java for the regulation of output. The export of these two commodities in 1936–37 was of the value of £32 millions (two-thirds manufactured and one-third raw) and £15 millions respectively. Sugar, on the other hand, has become an active industry, under a protective tariff, and the acreage of cane is now in the neighbourhood of 3½ millions, the output having doubled in the last 12 years. The total cultivated area in British India is 230 million acres, about 15 per cent. of which carries more than one crop in the year.

Of the other natural resources of India, forest produce is prominent, as 12 per cent. of the area in the British provinces (excluding Burma) is under forests. Coal comes second, with an output in 1936 (the last year for which full figures are available) of 23 million tons. Gold was mined to the extent of 326,000 fine ounces; but it is worked mainly in the State of Mysore. Nearly 6 million fine ounces of silver were produced, and close on 2 million tons of salt (Aden, however, contributing to this last figure). Iron ore showed an output of about 2⅓ million tons, and manganese of 640,000 tons. Bauxite, tungsten, and monazite are growing in importance; and there is an old-established petroleum business in Assam, with newer developments on the N.W. frontier.

Imports and Exports.—Eight years ago the sea-borne trade of India was valued at £485 millions: in 1936–37 it had shrunk to £282 millions. But improvement was creeping in, and a favourable balance of trade was being restored on healthy lines. When the outside world found itself unable to buy from India the agricultural produce which used to be its staple export, India had to turn to other means of meeting its import bills; and the consequence was a prolonged drain upon the precious metals of which India has for ages been proverbially the sink. Twelve years ago the net imports of treasure (chiefly gold) was in the neighbourhood of £70 millions. When bad times came, this position was completely reversed, and five years ago there was a net export of £50 millions of treasure. In 1937 the net outflow had fallen to just over £11 millions. During the period of slump, it has been estimated that India must have parted with at least £200 millions worth of its hoarded gold.

The balance of payments in 1936–37 for India's obligations abroad will be apparent from the following analysis of the sea-borne trade (figures in £ millions): Imports: merchandise 95,793, treasure 11,614; exports: merchandise 151,922, treasure 22,305; excess of exports, 66,820. Great Britain provided 38 per cent. of the imports and took 31 per cent. of the exports: the corresponding figures for the U.S.A. were 6½ per cent. and 9½ per cent. respectively.

Apart from the general response to world conditions which helped the upward movement of industry in 1937, the rearmament of Europe was not without some indirect effect, especially on the prices of iron and steel. A more direct fillip, however, was provided by Japan: she was too busy with her military enterprise in China to pour the usual flood of cotton goods into India, and the Bombay millowners have enjoyed an unusual run of prosperity.

Railways.—The route mileage of open lines in India as a whole was over 43,000m., close on 39,000 of which belong to the State, though the agency and conditions of working vary largely. Roughly half the mileage is on the broad or 5½-foot gauge, and the greater part of the other half on the metre gauge. The capital at charge was about £665 millions, and the return from State-owned lines in 1936–37 was as follows in £ millions: Gross traffic receipts, 71½; net receipts, 24·0; interest charges, 23·1; surplus, 0·9. For six years up to March 1936, there had been successive deficits in the railway revenues, aggregating 31½ crores (£23½ millions). The failure of the railways to render the assistance which had been expected from them to general revenues led to an exhaustive inquiry into the whole system by Sir Ralph Wedgwood, an eminent authority on British railways: his report was published in June 1937, but the decisions of the government upon it have not yet been completed. The competition of road traffic is beginning to cause similar difficulties to those experienced in other countries; but that motor transport is still in its infancy is evident from the following statistics, and from the fact that 1935 was the first year for which such figures were collected: cars (including taxis), 109,565; cycles, 12,411; buses, lorries, etc., 39,836.

Currency and Exchange.—The unit of currency, the rupee, is a silver coin of 180 grains troy, eleven-twelfths fine, and linked to sterling at a parity of 1*s.* 6*d.* There is a variety of fractional coinage, the rupee being divided into 16 annas, and the anna into 4 pice or 12 pies. A lakh of rupees is 100,000 (£7,500), and one hundred lakhs make a crore (£750,000). Currency notes from one rupee to ten thousand rupees in denomination circulate to the number of about 120 millions. Throughout 1937, the trade balance kept the rupee steadily above its sterling parity.

Public Debt.—The public debt of the central government is distributed between India (539·8 crores) and England (£276 millions). The provincial governments have now their own borrowing powers, though only Bombay, the United Provinces, and Punjab have so far come on the market. An indication of the strength of India's financial credit is afforded by its latest rupee loan in May 1936, when 12 crores, redeemable in 1948–52, were raised at par on an interest basis of 2½ per cent.

Budget and Taxation.—The Budget estimates for 1937–38 gave the following totals (£000)—Revenue: central 89,564; provincial 62,935; total 152,499. Expenditure: central 89,510; provincial 62,821: total 151,331.

There are two topics of perennial controversy between the central and the provincial governments: the obligation of the former to assist deficit provinces, and the allocation of the proceeds of taxation on incomes. An award on both points has been issued by Sir Otto Niemeyer, a British Treasury expert, and is still under discussion. Customs continues to be the mainstay of the central revenues: the tariff varies widely round a general standard of 25 per cent. *ad valorem*, rising to 50 per cent. and over for certain luxury articles (cars, cigars, wireless sets, confectionery, plate, etc.), and becoming severely protective for sugar, matches, silk and cotton fabrics, iron, and steel. For sugar, the protection is so effective that an excise duty has been imposed on its local manufacture as some contribution to the loss of revenue on its import.

Banks.—The banking system is being rapidly transformed from the old indigenous lines to modern methods. In 1934 (later figures are not available) there were 34 Indian joint stock banks, each with capital and reserve of over 5 lakhs (£37,500), and a large number of smaller concerns. Besides these there were 33 co-operative banks, the 18 exchange banks which have their head offices outside India, and the Imperial Bank of India at the top of the tree. The new Reserve Bank is now fully established and has taken over the whole of its currency and other functions, the separate office of Controller of the Currency having been abolished in 1937.

Defence.—The regular army in India comprises about 60,000 British and 140,000 Indian troops. There is also an auxiliary force (European) of about 24,000; and the Indian Territorials are about 18,000 strong. Finally, the Indian Army Reserve can call on about 35,000 men. Forces maintained by the Indian States number some 45,000 in all, and can in emergency be put under the orders of the Government of India.

There are now 8 squadrons of the Royal Air Force stationed in India, with one bomber transport flight. An Indian Air Force was constituted in 1932.

The old Royal Indian Marine was formed into a Royal Indian Navy in 1934, and is now a purely combatant naval service, consisting of a depot ship, 5 sloops, and 3 minor craft, commanded by a vice-admiral of the Royal Navy.

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INDIANA: *see* UNITED STATES OF AMERICA.

INDUSTRIAL ARBITRATION: *see* ARBITRATION, INDUSTRIAL.

INDUSTRIAL HYGIENE. In Great Britain the outstanding event in the field of industrial hygiene during 1937 has been the enactment of the new Factories Act. The Act contains many new provisions, only a few of which can be indicated here. Under certain conditions the medical supervision of workers may be required. An elaborate code of safety provisions, which require special precautions in the case of juvenile workers, should effect a considerable reduction in the number of industrial accidents. The sections dealing with cleanliness, overcrowding, heating, and ventilation require a better working environment, and for the first time adequate lighting is required. Generally, the hours of work of women and young persons must not exceed 9 per day or 48 per week. The hours for young persons under 16 are limited to 44 per week, but under special circumstances they may be increased to 48 per week. Women and young persons over 16 may work overtime up to 100 hours in a year, and in special cases the overtime for women may be increased to 150 hours. There are general welfare provisions, and the secretary of State may make special welfare regulations where necessary. The wide powers given to the secretary of State are an important feature of the act as a whole. The act should raise the general standard of factory hygiene in Great Britain to the level already attained in some well-conducted concerns.

In North America, an interesting development has been the creation of industrial hygiene divisions by a number of State departments of health. New York State has adopted a code controlling dustiness in rock-drilling. All rocks are divided into two classes: (i) with less than 10 per cent. of free silica, and (ii) with over 10 per cent. If drilling is done, the dust concentration must be below 100 million particles per cubic foot if the rock belongs to class i, and below 10 millions if it is in class ii. There is some likelihood that other States will adopt similar codes.

For compensation purposes in Great Britain, silicosis is defined in accordance with well-recognized signs of disease and stages of disability. But working alongside miners who have contracted certifiable silicosis are men with pulmonary disablement which is not certifiable as silicosis, and the incidence of certifiable cases varies even in adjacent mines, where the environmental conditions might be presumed to be similar. The Medical Research Council have decided to make a large-scale investigation of this problem.

British and Canadian workers have independently reported work bearing on silicosis. They show that the solubility of silica is substantially influenced by the presence of other substances. The Canadian investigators find that 1 per cent. of finely divided aluminium added to pure quartz may reduce its solubility by 96 per cent. Exposure to quartz dust over a period of six months produced silicosis in rabbits, while exposure to the same dust with 1 per cent. of aluminium produced practically no fibrosis.

Much attention is now attracted to the health hazards which may arise from the increasing use of volatile organic substances in industry. Valuable publications on this subject have appeared, notably *Report No. 80 of the Industrial Health Research Board*, and a paper in the *Journal of Industrial Hygiene and Toxicology* for Oct. 1937.

For some time it has been asserted that omnibus workers suffer an excess of sickness from gastric disturbances, but any generally accepted evidence of this has been lacking. An investigation by the Industrial Health Research Board suggests that these workers do, in fact, suffer some excess of gastric illnesses. (T. BE.)

INDUSTRIAL LEGISLATION: *see* LEGISLATION, INDUSTRIAL.

INDUSTRIAL RESEARCH. Self-sufficiency in their industries is the research aim of many countries. Nevertheless in a few fields—tin and silver are examples—national frontiers are ignored in industrial research. The researchful rayon industry has had phenomenal success, and the annual world production is now sufficient to make one full-length garment, using three yards of material, for every person on earth. Permanent water-repellents and crush-proof processes for textile fabrics received much attention in 1937. Novel synthetics brought a new era to solvents, paints, plastics, and perfumes. Research on problems of industrial hygiene went forward and laboratories devoted to this work were established by many organizations. Air-conditioning investigations included mechanisms of evaporation of water, drying, and equipment. Designs were prepared for underground bombproof power plants for Europe's chemical industries.

Below are listed the outstanding results in industrial research in the leading countries of the world.

Canada.—Extensive scientific research is being carried on in manufactures associated with power and transport; with petroleum and petroleum products; industries connected with the heavy chemicals; precious metal recovery, radium, aluminium, cobalt, selenium and tellurium, pulp and paper, sodium and phosphorus compounds, acetylene generation and synthetic products from acetylene, refractories and cement, and textiles. Since Canada has become an important producer and world supplier of radium, the international price has declined about 50 per cent. The National Research Council of Canada is demonstrating the high value of basic scientific investigation in national welfare; its accomplishments constitute a source of pride to the Dominion. During 1937, some 70 original contributions on physical and chemical topics were published in the *Canadian Journal of Research*. Various Canadian universities are busily engaged on sundry agricultural problems.

Czechoslovakia.—The Coal Research Institute in Prague has studied the reactivity of coke, and the Glass Research Institute at Hradec Kralove the standardization of lead glass. Athermal glass (to secure 'cold light' in buildings) was developed at Billin, and, like the United States, Czechoslovakia took up seriously the production of glass fibres. Synthetic resins, pharmaceuticals, lacquers, explosives, and rayon strengthened their positions through research. Investigations on synthetic rubber were especially active.

France.—Industrial research related mainly to dyestuffs, heavy chemicals, naval stores, essential oils, perfumery and toilet preparations, fertilizers, and wines. Synthesis as connected with petrol, coke-oven gas, and coal distillation made considerable advance. Through other research, progress was accomplished in producing the vat series of fast colours, and many dyewares were introduced for acetate rayon. France is enlarging her cellulose industry, and during the year commercialized the Sindl process of making uniform cellulose triacetate.

Germany.—All industrial research positions under the German Ministry of Education are unified; the Reich Research Council, which plans all investigations, now has jurisdiction over about 1,000 research organizations. Plastics, rubber, textiles, fats, cellulose, and metals are receiving main attention. German research was especially active during 1937 in the fields of alloys, synthetic resins and rubber, tanning materials, and art goods. Calcium chloride and sodium silicate were tried for reinforcing shifting sands and other loose formations under building foundations. German engineers were energetic in promoting the use of magnesium alloys and in utilizing previously unworked iron ores. Word came of a new process for rapid saponification; the 'Igepals' are new detergents of German origin; a German factory is making soap from fat derived from coal; the solution of problems of producing fatty acids economically from petroleum is being zealously sought. German technologists introduced more refined processes in the coking industry of the Ruhr, increasing yields, particularly of benzene. By one process, we are informed, about 80 per cent. of the sulphur produced in coking can be recovered. Lately Germany has turned to anthracene as a raw material for making carbon black. German chemists demonstrated that coal-tar oils can be used as fuel for Diesel engines, if there are added small amounts of 'Kogasin', an intermediate product of the Fischer synthetic petrol process. A new process for the manufacture of triacetylcellulose was announced. Germany is engaged in building up a large synthetic rubber industry, based on a product termed 'Buna'. Leather-like products from plastics were developed. A new German raw material for varnishes and plastics is cellulose acetobutyrate, and a novel German plastic is 'Astralon', a cousin of American 'Vinylite'. A new chemical filter material and fibre ('Zellwolle') appeared, as did new developers of the pyrogallol series.

Great Britain.—The Department of Scientific and Industrial Research, through the organizations working productively under its aegis, added bountifully to scientific and technological progress. The British Non-ferrous Metals Research Association reported work on the properties of lead and lead alloys in relation to important uses, published research on the effects of impurities in copper, and described the mechanical properties of magnesium alloys at elevated temperatures. The Building Research Board, active for 11 years, made substantial progress towards the solution of problems involved in the use of such constructional materials as cement, stones, plaster, and mortars. Wood preservatives were investigated broadly by the Forest Products Research Board. Advances in lubrication were considered thoroughly by the Institution of Mechanical Engineers in a symposium of 140 papers. A new liquefied petroleum gas was introduced, and the search for petroleum in Great Britain was continued. Further progress in low-temperature carbonization of coal and in oxidizing ethylene with air was reported. The Rothampstead experimental station paid much attention to insecticides and weed killers and to liming of soils. The Medical Research Council investigated the health effects of industrial solvents. The Food Investigation Board has been studying problems in the transport and storage of food, and has under development the shipment of tropical fruits, especially conveyance under gas storage. The growth of plastics revived the manufacture of synthetic phenol, dormant since the World War. The Water Pollution Research Board worked on the use of synthetic resins for water softening. A firm announced a process whereby a wool-like character can be given to rayon staple fibres, and 'Velan PF', a new water-repellent material for textiles, was exhibited. All the varied interests of the dye consumer are covered by British specialists.

Hungary.—The demand for aluminium has fired the ambition of Hungarian scientists to find new methods of ore location and treatment. The availability of agricultural wastes for motor fuel is being studied in this country, which produces no petrol, and a quest for petroleum is likewise being carried on.

India.—The Institute of Science issued results of five years of research on the utilization of cane molasses and also described syrup and soap from cashew. A jute research laboratory was opened in Calcutta. The government's Industrial Research Bureau published a broad study of Indian vegetable oils. The Lac Research Institute at Namkum, established in 1935, is investigating shellac.

Italy claims self-sufficiency in nitrogen products, now having 13 nitrogen-fixation plants. Much scientific attention was accorded to the explosives and heavy chemicals industries, and improvements were made in the production of barium sulphate and titanium oxide. Tuscan soffioni are being used to produce electrical energy, borax, and boric acid. The Florence Experimental Institute made optical glass. A new process applied in Cogne is said to harden ordinary mild steel without tempering. The production of synthetic petrol and lubricants by hydrogenation of coal advanced to the commercial stage. The tannin and dye resources of Ethiopia were studied, a synthetic rubber research institute capitalized at two million lire was reported, and a company set aside six million lire to study rubber substitutes and six million for research on cables. The textile industry has been well developed by science, and the utilization of by-products of wine culture is being investigated.

Japan.—Magnesium industrialists of Japan are said to be trying new methods of electrolysis. A coal liquefaction process was described after 16 years of research, and investigations on petroleum refining and on electrochemical products have been active. Uses for shark oil were found, for example as a lubricant in aeroplane motors. Japanese manufacturers of paper, other cellulose products, textiles, dyes, and plastics are going forward through research. A process for making fibre from seaweed has been reported.

Sweden.—Research was started on the utilization of feldspar, a new process for producing and briquetting charcoal was worked out, and the value of arsenic preparations in preserving wood was investigated. Swedish scientists also embarked upon research on the use of straw for industrial purposes.

United States.—During 1936 and 1937, about $350 millions was spent by the process industries in buying modern equipment to replace antiquated machinery, and in constructing new plants to enlarge production facilities. The heavy chemicals, pulp and paper, rayon and transparent wrapping film, coke and manufactured gas, petroleum refining, and distilling industries have been foremost in this industrial development. American railroads are experimenting on light-weight equipment, from the rails up. Physicists are endeavouring to introduce their services to the industries, and a new periodical, *Journal of Applied Physics*, made its appearance. The Farm Chemurgic Council is forming State councils. Battelle Memorial Institute, principally concerned in fuel and metallurgical research, expanded its facilities. The new building of Mellon Institute was dedicated. A number of large educational and company laboratories were erected during the year.

Some of the accomplishments of research during 1937 may be mentioned. Spodumene was put to work to produce lithium chloride for use in the conditioning and drying of air. A device employing sound waves to combat smoke and fumes was announced by the Bureau of Mines. A new inorganic cement and adhesive (' Hubbellite ') and a new series of super-refractories (' Monofrax ') were developed. A novel synthetic insulating compound was introduced for cables ; a new flame-proofing material for textile fabrics and paper was announced. New plastics came in both liquid and powdered forms. The largest plastic piece ever moulded, a reflector 26½in. in diameter and 11½in. in depth, was produced from the synthetic resin ' Plaskon '. Food preservation is being investigated on a large scale.

Among other recent American research creations are new adhesives from synthetic resins ; cellulose sponge ; new pigment dyes ; novel emulsifying agents ; ' Triton B ', an organic base ; new plasticizers, such as naphthyl-beta-mercaptan for rubber ; plastic wood ; rapid drying ink ; morpholine, a new solvent ; ' Tergitola ', compounds for use as wetting agents ; tetraphosphoric acid ; a titanium silicate pigment ; electrolytically coloured metals ; and synthetic ascorbic acid (vitamin C) prepared from sorbitel, which, in turn, is made from corn sugar. Vitamin A is being produced from fish-liver oils by molecular distillation.

Soviet Russia has been showing definite growth in technical publications. In 1937, the ' Third Five-Year Plan ' for industrial research was formulated by the Academy of Science, and the Soviet continued to progress in research on oil-shale, peat, fertilizers, synthetic nitrogen, synthetic rubber, soaps, essential oils, and pharmaceuticals. Attempts to gasify coal underground were renewed.

Industrial Research in other Countries.—Australia has a productive Council for Scientific and Industrial Research, active for 11 years. Austria studied its petroleum, whose production has been increasing. The Ministry of Agriculture of Brazil described deposits of tantalum, beryllium, uranium, and rare earths in that country. The characteristics of copal resins were also investigated in Brazil. German chemists are aiding Brazilian authorities in an effort to discover uses for surplus coffee. The minister of public health of Chile decreed after research that all salt for human consumption shall contain 4 per cent. of sodium phosphate, owing to lack of phosphorus in the Chilean diet. An Academy of Technical Sciences was formed in Denmark to encourage industrial research. Research in Norway, on the production of refractories from rocks such as chrysolite and serpentine by fusion with magnesia, was divulged in the literature. The production of whale-liver oil gave promise of becoming an important Norwegian industry. Switzerland maintained a predominant position in research on fine chemicals, especially pharmaceuticals. (E. R. W.)

INFANT MORTALITY. The most common method of measuring the mortality of children under one year is to relate the infant deaths in a calendar year to the births in the same calendar year. This infant mortality rate exceeded 300 per 1,000 in Bavaria and Württemberg in the 1870's, and it is probably still as high to-day in large parts of Africa and Asia. The rate has been below 50 in Norway since 1929, in Sweden since 1933, in Holland since 1931, in

INFANT MORTALITY RATES 1871–75, 1901–05, 1931–35, AND 1936, PER 1000

Country (*a*)	1871–75	1901–05	1931–35	1936
AUSTRIA	264	216	99	93
BELGIUM	151	148	82	—
BULGARIA	140 (*b*)	148	147	143
DENMARK	137	119	71	67
ENGLAND AND WALES	153	138	62	59
SCOTLAND	127	120	81	82
NORTHERN IRELAND	95	98	78	77
IRISH FREE STATE			67	74
FINLAND	170	131	72	66
FRANCE	178	139	73	67
GERMANY	244 (*c*)	199	75	66
HOLLAND	210	136	45	39
HUNGARY	250 (*b*)	212	157	140
ITALY	209 (*d*)	167	105	100
NORWAY	108	81	45	—
RUMANIA	191	207 (*e*)	183	175
SPAIN	193 (*f*)	173	113	—
SWEDEN	134	91	50	43
SWITZERLAND	198	134	48	47
YUGOSLAVIA	172 (*b*)	149	156 (*g*)	—
AUSTRALIA	118	97	41	41
NEW ZEALAND	91 (*f*)	75	32	31
JAPAN	147 (*b*)	152	120	—

(*a*) Territory of the respective period.
(*b*) 1891–95.
(*c*) 1872–75.
(*d*) 1876–80.
(*e*) 1901–03.
(*f*) 1881–85.
(*g*) 1931–34.

Switzerland since 1932, in Australia since 1929, and in New Zealand since 1920. In England, the United States, and the Union of South Africa (Whites), it is about 60.

Infant mortality varies very much from district to district. In 1936 the rate was nearly 100 in Bethnal Green and in Stepney, while in the east and the south-west of England it was below 50. (R. R. K.)

INFANTILE PARALYSIS. Nearly 30 years ago, Dr. Karl Landsteiner, of Vienna, transmitted infantile paralysis from children to apes and monkeys, and proved that the disease was caused by a virus too small to be seen by the most powerful microscope. The past two years have seen the confirmation of a discovery nearly as important as Landsteiner's, which made it possible to study this disease in the laboratory. This new discovery has revealed a curious trait, really a weakness of the virus that gives hope of a successful mass attack upon it. It now appears to be certain that this extremely minute wrecker of nerve cells can propagate itself and travel through the bodies of monkeys and men only inside nerve cells and nerves. If that is true then, except in rare instances, the paralysing invader has only one gateway into human beings ; and that is by way of the tiny endings of the nerves of smell, high up inside the nose.

In the experimental infantile paralysis of monkeys, a most powerful and simple way of protecting these animals against the virus has been discovered by two American investigators, Charles Armstrong and Edwin W. Schultz. Mixtures of picric acid and alum, instilled into monkeys' noses, guard a great majority of these animals from heavy inoculations of infantile paralysis virus for at least one week. Yet more important, 1 per cent. zinc sulphate solution—harmless to monkeys and men—protects nearly 100 per cent. of monkeys against repeated and overwhelming inoculations of deadly virus for one month and often for two months.

The field test of this hopeful science is an extremely difficult one because of the relatively small number of human beings attacked in the most severe epidemics. This makes it necessary to test any hoped-for preventive upon very large numbers of people, very rapidly, because infantile paralysis epidemics are explosive, rising to their peaks suddenly, and quickly fading away. Simple means of applying zinc sulphate to children, by practising physicians under the direction of specialists, are now being worked out. In the United States, the recently organized National Infantile Paralysis Foundation is proposing to make possible an adequate human field test of the experimentally powerful preventive. Funds furnished by the foundation will make possible the mobilization of an infantile paralysis-fighting army of physicians and nurses, working in concert with Federal, State, and local medical men. (P. de K.)

INFECTIOUS DISEASES : *see* Epidemiology and Infectious Diseases.

INFLATION. No catastrophic inflation occurred during 1937. In the absence of unmistakable instances, the existence of inflation may be a matter of opinion. Currency inflation is recognizable either by its ultimate cause (unbalanced budgets or other public policy involving an expanded credit base), or by its intermediate effect (expansion of currency and credit in circulation), or by its secondary effect (a general rise in prices, not caused by diminishing returns, monopoly, or restriction of supply). Examples of all these phenomena were present in 1937.

The ordinary British budget was balanced, but rearmament borrowing was begun on a scale of £400 millions in five years. Any inflationary effect, however, was offset by the accumulation of reserves in the unemployment insurance fund and increases of other government-controlled funds.

In the United States, likewise, an unbalanced budget was counteracted by the building-up of social security funds. The realized budgetary deficit in 1936–37 was $2,811 millions. In France, the government proposed to balance the budget in 1938 after a sequence of deficits, but France had also a large extra-budgetary armament programme. Big defensive expenditures, financed by credit, were a feature of the economies of Germany, Italy, and certain other countries, invalidating their published budget figures. The conflict in China inevitably caused an inflationary increase of Japan's governmental spending.

A rise in currency circulation was common in 1937. Bank of England notes in circulation rose from £467 millions at the end of 1936 to £505 millions 12 months later, although some hoards of notes held on continental account had been liquidated meanwhile. In the United States, on the other hand, neither money in circulation nor bank deposits showed any significant rise. In France, following a sharp depreciation of the franc, the volume of notes in circulation rose from 85,985 million francs in June 1937 to 91,370 million francs in September. The German note circulation rose from RM6,653 millions in Sept. 1936 to RM7,259 millions 12 months later. A similar annual rise of around 10 per cent. was common, for instance, in Argentina, Japan, the Netherlands, Norway, and Sweden. No such rise, however, could be called inflationary, and in other countries, such as Austria and Belgium, the note circulation fell.

The inflation of prices in 1937 was indubitable but temporary. Thus, wholesale prices of primary products in Great Britain rose by more than 20 per cent. between Nov. 1936 and March 1937 but fell back to their former levels within a few months. There was a parallel inflation and deflation of stock-market prices both in London and in Wall Street. (H. V. H.)

INNER MONGOLIA : *see* Mongolia.

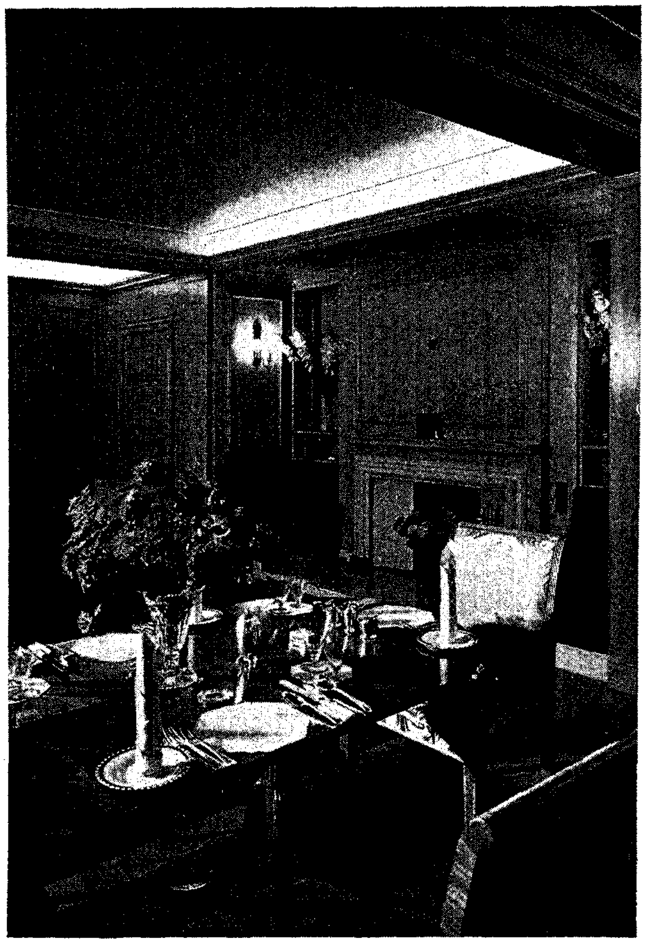
INNS : *see* Hotels, Restaurants, and Inns.

INSECT PESTS : *see* Entomology.

INSURANCE. This subject is covered in the following articles (*q.v.*) : Accident and Miscellaneous Insurance ; Fire Insurance ; Life Insurance ; and Marine Insurance.

INTERIOR DECORATION, apart from that in 'period' styles (for which *see Ency. Brit.*, vol. 12, pp. 474–96), has exhibited simple but bold manipulation of surfaces and masses in keeping with the mathematical lines of modern exterior architecture. For embellishment, excrescences remain out of favour, and designed patterns have continued largely to give place to the exploitation of plain colours, though of unexampled richness and variety, and above all of the texture or figuration inherent in the myriad materials now available, whether plaster, timber, or fabric. With mouldings in banishment, the flush door rules ; floors, walls, and ceilings show unbroken surfaces and tones ; furniture is long and low. Only in hangings is the feeling for pattern indulged ; curtains, indeed, display kaleidoscopic intricacy.

Floors.—For a bare floor, with or without small rugs, parquet is ideal. In default, laminated parquetry may be laid on an existing floor, or, if this is of satisfactory timber and (as it should be) secret nailed, it may be finished with



Dell & Wainwright]

A DINING-ROOM INTERIOR

one of the polish-stains made for the purpose. Plain 'battleship' linoleum and rubber (increasingly) have their adherents. These and carpets give warmth, and the last, if laid over an underfelt, even on indifferent flooring, wear. For kitchens and bathrooms patent composition floorings are also in vogue; for the latter cork parquet excels.

Walls.—Smooth or textured plasters may be finished in distemper (preferably oil-bound), or oil-paint or cellulose lacquer, dull or glossy, often sprayed on. Spraying opens up wide possibilities in the application of metallic dusting or a transparent finishing coat of a contrasting tone. Wall-papers, though some are discreetly patterned, frequently rely on texture too, some simulating linen or leather. Actual linens and canvases are sometimes used. Plywood can be applied in matched veneers even on extensive wall-surfaces.

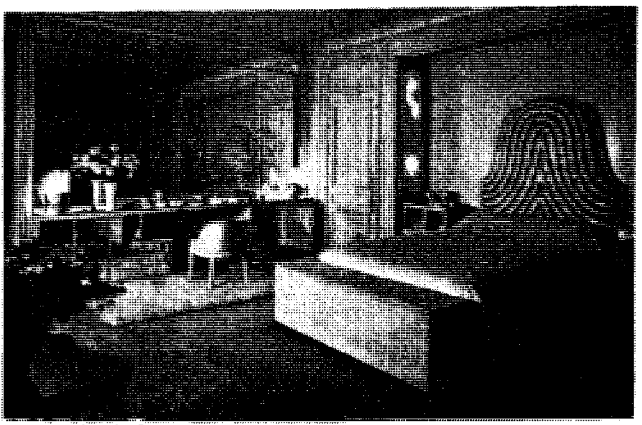
The choice of hangings is almost limitless. Picturesque fabrics, including some of peasant origin, are on the market from all over the world; tapestries in imitation of stained glass are an example.

If the fireplace is retained, it is usually built flush; but it is largely giving way to the electric or gas fire, also sunk flush, and well above floor-level, in the wall.

For pictures the comparative smallness and lowness of modern apartments gives sparing occasion. But mirrors are used decoratively, and glass panels, perhaps etched or engraved and illuminated with concealed tinted lights.

Furniture.—Furniture of to-day is clean of outline and, as far as may be, without legs. The wooden pieces might have been tooled into cubes and slabs, with rounded edges and corners the only concession by the machine. The style relies on showing up the natural figure of the wood. Very beautiful timbers, hitherto little known, are brought from the world's forests; veneers of all varieties on laminated wood cores are widely used by cabinet-makers, usually matched and sometimes inlaid. Clear cellulose lacquer gives a finish indestructible and equal in appearance to that of french polish. In upholstered work a little more latitude of form is allowed. The cylinder may be combined with the block; the squabs may depart from strict rectangularity, and they will be inclined at easy angles—for comfort is studied as never before. In really small rooms built-in furniture saves space.

Artificial Illumination.—Concealed lighting is prevalent. Few modern rooms have cornices, but deep bowls, either on movable standards or affixed to walls, project flood-lights to be reflected from the plain white ceiling. Strip-lights, too, lend themselves to concealment—for example, within picture-frames or even under table-tops and so forth, or they may be mounted in troughs designed for them. (H. Fw.)



Dell & Wainwright]

A BEDROOM INTERIOR, BY R. W. SYMONDS

INTERNATIONAL, originally the familiar name of the International Working Men's Association, founded in London in 1864 by Karl Marx and Friedrich Engels, as an organization of workers of all countries to disseminate and work for the principles of Marxian Socialism. This body —the 'First International'—dissolved at Philadelphia in 1876, and was succeeded in 1889 by the 'Second International', founded in Paris, on the centenary of the French Revolution, by delegates from various countries to resume the work of the former body. On the outbreak of the World War in 1914, this body in its turn practically collapsed as a result of dissensions among its members regarding their attitude to the conflict. A new International was formed in Vienna in Feb. 1921—sometimes known as the 'Two-and-a-Half International'—by the Socialist parties of various countries, and before long merged with the relics of the old Second International to constitute the Labour and Socialist International, formed at Hamburg in May 1923, whose headquarters were established in London. This body represents the so-called 'reformist' side of the Socialist movement, in opposition to the Third, or Communist, International—the 'Comintern'—set up by delegates from a dozen countries after the Russian revolution at Moscow in 1919. The declared object of the Third International was to act as a standing protest against the 'bourgeois' tendencies of the Second and its lack of activity. It called upon Marxists and Communists throughout the world to support and defend the new state of things in Russia, and to work for revolutions in their own countries. A rather shadowy 'Fourth International' of Trotskyist Socialists, to the Left of the platform of the Third, is also in existence, as is a 'Green International' of the peasants of Central and Eastern Europe, which is opposed alike to Communism and to Fascism.

The Red International of Labour Unions ('Profintern') was founded at Moscow in 1921 under the auspices of the Third International to work for the reorganization of the Trade Union movement throughout the world on militant and revolutionary lines; and there is a Socialist Youth International, which has sought since 1923 to promote the interests of young workers in all countries.

The Comintern's activities in seeking to promote world revolution have tended to lessen in recent years, but in Nov. 1937 a manifesto emanated from it urging the masses in Democratic and Fascist countries to follow the Russian revolutionary example, and to work for the establishment of a 'United Front' of Anti-Fascist forces.

INTERNATIONAL ARBITRATION: *see* PERMANENT COURT OF INTERNATIONAL JUSTICE, THE.

INTERNATIONAL LABOUR OFFICE. The I.L.O. in 1937 represented 62 States, including all the leading countries except Germany. Italy, however, following her resignation from the League, resigned at the end of the year. The U.S.A., the U.S.S.R., and Japan are all members, the two former being recent recruits. During the year 1936–37 there were, in all, 50 ratifications of Conventions adopted by the I.L.O., including eleven by Great Britain, of which six dealt with old age and widows' pensions and sickness insurance, and none involved any substantial advance on existing British practice. In general, the progress made with ratifications remained very slow. Fourteen of the fifty came from South and Central America, and only thirteen from continental Europe.

The 1937 conference of the I.L.O. was concerned largely with proposals for the adoption of the 40-hour week, subject to certain modifications and exceptions, in the textile, chemical, and printing industries, and with the planning of public works as a means of preventing unemployment. The draft convention for the textile industry was accepted by the necessary two-thirds majority (88 votes to 41); but the conventions for the chemical and printing industries, though approved by a majority of the delegates, fell short of the requisite two-thirds, and were accordingly not carried. The conference approved resolutions dealing with the rational planning of public works in advance, in order to combat trade depressions, and with international co-operation in respect of public works. It also revised the earlier convention dealing with the minimum age of employment for children in industrial and non-industrial occupations, with the general object of raising the minimum age from 14 to 15.

The governing body of the I.L.O., as elected in 1937, consists of 16 government members (representing U.S.A., Canada, France, Great Britain, India, Italy, Japan, U.S.S.R., Brazil, Chile, China, Mexico, Norway, Poland, Spain, and Yugoslavia); 8 employers' delegates (from Great Britain, France, Denmark, Italy, India, Yugoslavia, South Africa, U.S.A.); and 8 workers' delegates (from Great Britain, France, U.S.A., Belgium, India, Japan, Spain, Sweden); together with substitute members from a number of other countries. The I.L.O. now publishes, in addition to the *I.L.O. Year Book*, a separate *Year Book of Labour Statistics*, as well as the monthly *International Labour Review* and its various series of studies and reports dealing with particular subjects. It remains integrally connected with the League of Nations, all League States being automatically members of the I.L.O., as well as certain others (*e.g.* the U.S.A.). Representation at conferences is in the proportion of two government delegates, one employers' delegate and one workers' delegate from each country, though some countries (14 in 1937) are in fact represented only by government delegates. Each delegation is allowed the use of substitute members, in order that it may be represented by persons expert in the particular subjects discussed. States are obliged to submit I.L.O. conventions to their respective parliaments (or other appropriate bodies); but each State is free to ratify any convention or not. In all, up to March 1937 the I.L.O. had adopted 58 conventions, and registered 739 ratifications, including 30 by Great Britain. (G. D. H. C.)

INTERNATIONAL LAW. Perhaps the most significant event of a year not noted for renunciation of sovereign claims, is the coming into force of three of the conventions signed at The Hague Codification Conference of 1930. Each of these conventions has now been ratified by the required 10 or more countries. The principal convention, relating to certain conflicts of nationality laws, facilitates renunciation or waiver of one's nationality, by the person himself or by the country with the lesser claims, in certain cases of dual nationality. For example, third States are to recognize exclusively the single nationality of the country in which the dual national is habitually resident or most closely connected. The chapter on the nationality of married women provides for a limitation in the number of cases of dual nationality or statelessness arising through marriage. Children of unknown parents or parents of no or unknown nationality shall take the nationality of the place of birth. Among the 10 States that have now ratified, the largest are Great Britain, India, China, and Brazil.

The convention of most interest to, and the only one ratified by, the United States, is that relating to military obligations in cases of dual nationality. Adopting a principle long urged by the United States, this provides that a person having dual or multiple nationality shall be bound to perform military service only in that country in which he habitually resides or with which he is most closely connected. Among the Powers which have ratified this convention in addition to the United States, are Great Britain, Brazil, India, Australia, and South Africa. It has not been ratified by France, Italy, or Switzerland, with which the United States has had the most difficulties in this matter of military service.

A third convention provides that in countries not conferring their nationality *jure soli* a person born of a mother who was a citizen and of a father without nationality or of unknown nationality shall have the nationality of the country of birth. This has been adopted by Great Britain, Brazil, and several of the British dominions. This is already law in the United States.

War in China.—This conflict has raised some interesting legal questions. War was not declared either by Japan or China, but in this they have tradition behind them. War is a fact, and does not depend on declaration or the name given it.

It is doubtful whether the Nine-power treaty has really been violated, for the 'territorial and administrative integrity of China' which the signatories agreed to 'respect' has not actually existed since 1842, when the western Powers began to encroach upon it by territorial seizures, tariff limitations, and armed occupations of Chinese territory.

The British government sent a well-framed note to Japan protesting against the bombing on an open road of the British ambassador to China, on the ground that it was 'wanton' and therefore illegal promiscuously to bomb civilians outside a war area, and emphasizing again the fundamental distinction between combatants and non-combatants.

The 'Panay' American gunboat on the Yangtze river, was sunk on Dec. 12 by Japanese bombs, together with some American-owned oil barges. Three American lives were lost. British ships were also struck, with loss of life. In both cases Japan disavowed the bombing, attributed it to a mistake, and offered indemnities and guarantees against repetition. An American note of Dec. 25 warned Japan against any further attack on American nationals, property, or interests. If this is intended to include attacks in war zones, it goes beyond the exactions of international law, and may give rise to difficulties.

Civil War.—The Spanish civil war raised a number of important questions. The Non-Intervention Committee in London, with the announced purpose of preventing the spread of the conflict, undertook to bar arms, ammunition, and implements of war from both loyalists and rebels. The United States followed suit by a resolution of Jan. 9, 1937, now formally adopted as part of the Neutrality Act. The refusal of countries to supply the Spanish government with arms, but on the contrary to deal with rebels and loyalists as if they were on an equal footing, raised the question whether this was not a breach of international law which requires friendly governments to help a constituent government, at least by continued trade in arms, to resist a rebellion. (*See* also NON-INTERVENTION COMMITTEE.)

On the other hand, the long-continued bargaining whether the belligerency of the Franco rebels should be recognized (as a condition of the withdrawal of outside 'volunteers') was probably also a departure from international law; for after July 1937, when Franco controlled two-thirds of Spain and of its population, the rebels could hardly legally be denied the status of a belligerent. The supersession of political considerations upon the legal questions made the case unique. Germany and Italy indeed in 1936 had recognized Franco's as the only government of Spain, and had assisted Franco with material aid. This was clearly an act of political intervention. Finally, when merchant ships on their way to Barcelona and other loyalist ports were sunk at sight in the Mediterranean, the Powers met at Nyon to take measures to stop these acts of 'piracy', for the identity of the attacking vessels remained undisclosed, and no government would assume responsibility for them. (*See* also MEDITERRANEAN.)

Incidentally to the Spanish war, the loyalists attempted to requisition Spanish merchantships in various foreign ports and take possession thereof through Spanish consuls. In some of these cases the owners filed a libel to recover possession of their vessels, and the question arose whether the Spanish requisitioning decree could be given effect abroad. In the case of the 'Navemar', requisitioned in Argentina and brought to New York and there libelled, the Circuit Court of Appeals gave effect to the decree partly on the ground that a ship is part of a nation's territory, that the change of ownership had been recognized in the Argentine, that the allegation of the public character of the vessel advanced by the Spanish ambassador could not be disputed in an American court, and that the ship under the Spanish flag was 'within Spanish jurisdiction' (90 Fed. (2d) 673). The case is under appeal to the Supreme Court. In a test case in England, the 'Christina' (59 Lloyd's Law Reports 1), a somewhat similar conclusion was reached.

The question of ships is different from that of private property on land. Conflicting claims to the ownership of property sent out of Spain under government orders have come before the French courts. These courts protected the rights of the person whom they found to be the legal owner under rules of French private law. This was the case with a consignment of potassium sent from Barcelona to Marseilles, *Moulin et al.* v. *Volatron*, 64 Clunet 535. (*See* also *Rousse* v. *Banque d'Espagne*, 1937, Dalloz Roc. Hob. 464.)

Private Property.—American and British courts in 1937 dealt with a number of other interesting cases involving private property in international law. Under the Roosevelt-Litvinov Agreement of 1933, assigning to the United States the assets of Soviet Russia in the United States, the Attorney-General brought suit against Belmont & Company, bankers, claiming title to a bank deposit made before 1918 by the Petrograd Metal Works. The United States claimed that the Soviet government had purported to dissolve Russian corporations and confiscate their property and assets. The United States Supreme Court held, with doubtful validity (301 U.S. 324), that the Russian decree purported to confiscate the bank deposit in New York, that it could legally do so, and that the United States by executive agreement could become the successor in interest of the Soviet. The case arose on a motion to dismiss without opportunity for the original owners of the deposit to be heard. For that a new action will be necessary. The Belmont case is unique among the western nations.

Another chapter was written in England to the Finnish ship claims. During the War, in 1915 some 13 Finnish ships were requisitioned in Great Britain on authority of the then Russian government. The owners claimed compensation from Great Britain under the Indemnity Act. Losing the case, on the ground that Russia was liable, Finland brought the matter before the Council of the League under Article 11 of the Covenant, on the ground that the issue jeopardized the friendly relations of two countries, Finland and Great Britain. The Council rejected the claim, although in the meantime the issue gave rise to an arbitration involving the question whether the Finnish owners had exhausted their local remedies in England. To this an affirmative answer was given by the arbitrator, Judge Baggs, of the Supreme Court of Sweden, in a notable opinion exploring the local remedy rule. The Finnish shipowners, turned down at Geneva, then began suit in the King's Bench in England against Baring Brothers, bankers of the old Russian government, claiming a declaratory judgment that both before and after the Soviet Revolution the Russian authorities had given the owners an assignment of part of the funds on deposit with Baring Brothers. Mr. Justice Luxmoore denied that an assignment had been proved (*The Times*, London, Nov. 20, 1937).

Recognition and Non-recognition.—Although at Geneva Great Britain and other Powers agreed in 1936 not to recognize Italy's conquest of Ethiopia, the exigency of practical affairs required different decisions. In 1937, ousted officials of the Bank of Ethiopia brought in England an action for a debt owed to the bank by an Egyptian bank. The British Foreign Office, on request, advised the Court that the Italian control of Ethiopia had been recognized *de facto.* Thereupon the Court held that only the Italian liquidator of the Bank could represent it to collect debts (*Bank of Ethiopia* v. *National Bank of Egypt*, 53 *Law Times* 751). Thus, the doctrine of non-recognition of obvious facts suffered further impairment. (E. Bd.)

INTERNATIONAL TRADE. At the end of Sept. 1936, the Tripartite Monetary Agreement was signed between Great Britain, France, and the United States. Under it the signatories promised to assist each other to maintain monetary stability, and also to refrain from competitive currency depreciation. It was rapidly adhered to by other countries, and was generally heralded as providing a new basis for the freeing and revival of international trade.

How have these hopes so far been fulfilled ? The story of 1937 must clearly take this as its starting-point, but it is equally necessary to have regard to the background of the Tripartite Agreement. This takes us back to 1931–32, the years in which Great Britain abandoned the gold standard and introduced her tariff ; the years when many countries first introduced exchange restrictions and imposed quantitative quotas upon imports of many commodities.

The history of 1931–36 must first be summarized. In England there was the change over to protection in 1932. This was followed by the Ottawa Agreement, under which the various members of the British Empire gave each other preferential duties on various classes of goods. Now, clearly if England gives Australia a preference of 15 per cent. in respect of certain imports from Australia, England must impose a duty of at least 15 per cent. upon imports from other countries, or else the Australian preference cannot be granted in full, even if the Australian goods are let in duty-free. Ottawa was followed by Commercial Treaties between England and certain foreign countries, such as the Scandinavian Powers, Germany, and Argentina, under which mutual concessions in respect of duties and import quotas were made. It was also followed at home by measures to organize the production and marketing of certain classes of British agricultural produce, and these entailed fresh control over imports, both by way of duty and of quota. In certain cases such as wheat, a duty was levied on imports for the purpose of subsidizing the home producer. Meanwhile, the United States were busy negotiating Commerical Treaties with foreign Powers, while the depression and the glut of such commodities as cotton, tin, and rubber led to the introduction of national or international schemes for the control of production, and these in turn affected international trade.

During all this time, Central Europe, the Balkans, and most of South America were enmeshed in a network of exchange restrictions, exchange clearings, and trade on a compensation or barter basis. Exchange restrictions began with a desire to maintain the gold value of the currency, and were applied first to prevent movements of capital out of the country, including the payment of debts due to foreigners. Then imports were restricted, both by direct quotas and also by the refusal to allot the foreign exchange needed to pay for them. Conversely all foreign exchange received by exporters and others had to be surrendered to the authorities. Next attempts were made to organize fresh foreign trade. In some cases Payments Agreements were concluded, under which the ‘ weak ’ or restricted country determined its imports from any ‘ strong ’ country solely by reference to its exports to that country. In other cases, Clearing Agreements between two ‘ weak ’ countries laid down that importers in each country should pay for their goods in their own country, the payments being made into a special clearing account kept at their central bank. Exporters were paid out of this account. Then there were various forms of ‘ compensation ’ trade, where importers and exporters got together, so that one drew on the currency obtained by the other. The essence of all these arrangements was to canalize trade country by country, with the inevitable consequence of a contraction in the total flow of world trade.

The world recovery of 1933–37 brought some easement. Austria was able to remove practically all her exchange restrictions, though she was forced to maintain the clearing agreements with many of her neighbours. Argentina relaxed her restrictions. In other cases, while the machinery of restriction remained, it operated more easily.

This brings us to the beginning of 1937. During the past year there were two important developments. The first was the visit of M. van Zeeland, who was then prime minister of Belgium, to France, England, the United States, and other countries. His visit was initiated by the British and French governments, and its object was to explore ways of bringing about a general reduction in tariffs and relaxation of import quotas and exchange restrictions. M. van Zeeland was peculiarly suitable for this task, for Belgium, together with Holland and the Scandinavian Powers, had taken the lead in the low-tariff group movement of previous years. This had the object of concluding multilateral trade agreements between a group of countries, instead of bilateral agreements between countries in pairs. It broke down, however, partly because of the Ottawa Agreement embracing the British Empire—in itself a low-tariff group ; partly because England insisted on her most-favoured-nation rights under existing treaties ; partly because the United States believed solely in bilateral agreements ; and partly because the time was not ripe for a general freeing of world trade. M. van Zeeland has been faced with a long and arduous task, for he has had to try to reconcile national and international interests, and he has realized the futility of formulating proposals which would not be generally acceptable. Nevertheless at the beginning of 1938 there were indications that he might be reaching the point where he could put forward a definite scheme for the general relaxation of trade and exchange restrictions.

More important were the Anglo-American trade discussions. These had long been envisaged on both sides of the Atlantic, but the first tangible step was Mr. Runciman's visit to America in Jan. 1937. It was quickly clear that some modification of the Ottawa Agreements would be necessary, and so the Dominions had to be brought into the discussions. A fair amount of secrecy attended the next move, but it is now clear that the question was discussed at the Imperial Conference held at the time of the coronation. The Australian premier asked, however, that no overt move should be made until after the Australian elections, due to be held in the autumn of 1937. As it would have been most undesirable for the Anglo-American trade discussions to have been made an issue in a Dominion general election, this request was at once acceded to. In consequence, there was no fresh move until the late autumn.

On Nov. 18 it was officially stated that the discussions had reached the point where formal negotiations between the British and United States governments could begin. This statement received an immediate welcome from the Canadian and Australian governments. And so the position stood at the end of the year. It was clear that there would be much sectional opposition on both sides of the Atlantic, but it was equally clear that the governments concerned envisaged a successful end to the negotiations and the conclusion of a Treaty embodying substantial concessions on both sides. Furthermore, as the Treaty would contain the most-favoured-nation clause, most of the concessions would extend to many other countries besides the British Empire and the United States. Thus at the end of the year the Tripartite Monetary Agreement of 1936 appeared to be leading to one substantial result.

Unfortunately, there were comparatively few signs of relaxation on the part of the countries with trade restrictions. Germany, the chief of the restricted countries, was pulled by conflicting aims. Her chief proclaimed need was for essential raw materials which she could not produce at home; and this need was emphasized by the general expansion in home industrial activity under the Nazi régime. But in the absence of any willingness to devalue the mark or revert to a free economic system, she had to measure her permitted imports by her exports; and for various reasons the recovery in her export trade fell short of her general recovery. Therefore, on the one hand she tried to give priority to those raw material imports needed by her export industries. On the other hand, she tried to make herself, through the invention and manufacture of substitutes, less dependent upon raw material imports. These aims were not wholly reconcilable, for raw material imports were needed for the factories built in pursuance of her self-sufficiency aims, and also for rearmament, which constituted a third claim upon her import trade. These divergent aims to some extent found expression in divergent schools of thought. The announcement in late 1936, and the vigorous execution since, of the second Four-Year Plan marks the triumph of the self-sufficiency school, for that is the plan's declared objective. Certain changes in ministerial personnel at the end of 1937 may also point in the same direction.

Looking backwards from the end of 1937, things are beginning to move, but the movement is very slow. The recovery during 1933–37 in world prices and world trade has permitted some degree of relaxation, and Brazil's decision, in Nov. 1937, to place her export coffee trade upon a competitive basis is the latest example of this. Much depends on the success both of M. van Zeeland's mission and of the Anglo-American negotiations, and 'success', in the latter case, means not merely a Treaty but a Treaty drawn on wide and generous lines, embracing a large number of important commodities. Something, too, depends upon whether Germany, in co-operation with other countries, can find a way of combining freer external trade and exchange with her internal economic, social and indeed, political aims. Finally, much depends upon whether world currencies, and particularly the franc, can maintain a fair degree of stability, with the ultimate possibility of *de jure* stabilization as well as *de facto* stability. These are the problems for 1938 and subsequent years.

(N. E. C.)

INTERSTATE COMMERCE COMMISSION: *see* STATE LEGISLATION; UNITED STATES: *Transportation*; RAILWAYS: *United States.*

INTOXICATION, ALCOHOLIC. Medical literature published in 1937 dealing with the treatment of alcoholic intoxication concerns itself largely with chronic alcoholism. The trend suggests a wider interest in the subject; a tendency towards improvement in technique; a need for further study of the nature and causes of chronic alcoholism; and a need for more constructive public policies seeking to ameliorate habitual drunkenness.

As in previous years, attention was called to the need for replacing the archaic attitude of the general public towards alcoholism with a more scientific one of natural phenomena being an endless chain of cause and effect, and that the drunkard cannot be understood, satisfactorily treated, or his condition modified through an emotional outlook dominated by vindictiveness and inordinate coercion, condemnation, maudlin sympathy, or condonation.

Treatment of the physical concomitants of chronic alcoholism consists of correcting faulty nutritional situations and the inauguration of a hygienic physical régime. The insulin shock treatment has been tried in the psychoses associated with or proximal to alcoholism. The same general principles apply in the treatment of delirium tremens as heretofore, including abrupt withdrawal of alcohol; safeguarding the patient from self-injury and exhaustion, especially cardiac exhaustion; promotion of elimination; reduction of intracranial pressure by spinal puncture, intravenous dextrose, caffeine, and magnesium sulphate; and promoting adequate nutrition, in some instances employing liver extract. Paraldehyde continues as the drug of choice for sedation, but the problem of sedation in delirium tremens is not satisfactorily solved. Morphine is contra-indicated, since it tends to increase intracranial pressure. The hypodermic administration of ethyl ether has been used in the treatment of delirium in pneumonia of the alcoholic.

Physical and chemical treatment so far devised offers no promise. Advocates of the 'habit' or 'conditioned reflex' as a cause approach the matter by contra-conditioning the patient through the substitution of either a conditioned reflex of nausea or disgust for the taste of alcohol, or other substitute conditionings having greater emotional significance to the individual than alcohol. Apomorphine or other nauseating substances have long been used to create nausea and disgust for alcohol. Other forms of substitution or contra-conditionings involve a transfer of emotional values to activities suchas religion, hobbies, different occupations, and also an appreciation on the part of the patient, for a period of approximately 12 months, that alcohol is unnecessary.

Advocates of the emotional or psychogenic cause recognize alcoholism as a symptom of some difficulty of the whole person, which in itself constitutes an interaction between the individual and his physical and cultural environment and circumstances. An appreciative understanding of these difficulties on the part of the patient, made possible through modern psychiatric techniques, helps to bring about a more satisfactory reintegration of his personality. This method of treatment has proved of great value in selected cases, but it is difficult, takes much time, and is not economically applicable to a large institutional population. Further experiments in the application of this approach in terms of group therapy may offer a more practical technique for its wider employment.

There is insufficient knowledge of the social, cultural, and environmental origin of chronic alcoholism. It is known that some neighbourhoods have an unduly high incidence of drunkenness. Its treatment or amelioration in this respect awaits further knowledge. Public policies for the correction of chronic drunkenness may embrace such factors in community supervision as techniques of court procedure; custodial and treatment facilities, the latter implying all forms of treatment, including disposition ; financial assistance and job placement for the individual ; and the enactment of legislative control measures wherein the sale of alcohol, with its moralist, profit and revenue motivation, would no longer obscure its medical, sociological, and economic significance.

The publication of Widmark's work in Sweden in 1922, dealing with a method for determining the alcohol concentration in the blood in ' acutely drunk ' persons, attracted attention as a diagnostic measure for acute intoxication. Its use, however, for determining the degree of intoxication leaves much to be desired in terms of standardization. Further studies are necessary before it can be accepted as a standardized procedure in the forensic field. The odour of alcohol on the breath, disordered articulation, and incoordinated gait continue the commonly accepted but unsatisfactory criteria of acute intoxication. The use of caffeine in the form of strong coffee, long considered desirable as a measure to sober ' acute intoxication ', is found to have little immediate influence on the alcohol content of the blood. It is not a remote possibility to anticipate that some form of medication may be found that will hasten the metabolism, degradation, or chemical destruction of alcohol within the body of an acutely intoxicated person. At present, however, stimulation of respiration, since alcohol is eliminated in part through the lungs, helps to reduce gradually the concentration of alcohol within the blood.

INVENTIONS : *see* PATENTS.

INVESTMENT TRUSTS, in Great Britain. There are approximately 200 investment trust companies known to the British investor. They control investments valued at slightly over £350 millions, and have a total issued capital in debentures, preference shares, and ordinary capital of £315/320 millions. It is usual to distinguish between English and Scottish trusts, and also between pre-war and post-war formations. The latest investigations suggest that English pre-war trusts account for 35 per cent. of the total capital of the investment trust movement, post-war English trusts for 27½ per cent., pre-war Scottish trusts for 22½ per cent., and post-war Scottish trusts for 15 per cent. Investment trusts proper should be distinguished from unit trusts, of which over 70 have been formed since 1931 ; these have sold more than £70 millions of their securities to the public.

The experience of investment trusts during 1937 can best be measured by their profits. According to the computations of *The Economist*, the net profits of 205 investment trusts whose reports were issued during 1937 increased from £8,976,677 to £10,310,389—an advance of 15 per cent. The profits of 2,279 industrial concerns, included in the total sample, increased over the same year from £240,239,194 to £281,434,843—an advance of 17¼ per cent. These profits are struck after providing for debenture interest.

Although dividend rates early in the year were relatively stable, the trusts reporting during the September and December quarters increased their average ordinary dividends from 4·4 to 5·3 per cent., and from 3·5 to 3·9 per cent. respectively. The more moderate increase in investment trust net revenues is due to two factors, which were operative during 1937. In the first place, part of the trusts' revenues has been permanently lowered through the conversion of fixed-interest securities to a lower interest basis, and also through default on foreign bond holdings. Secondly, there is a time-lag, which may average from 14 to 16 months, between the earning of higher industrial profits and their appearance in investment trust reports.

Although 1937 was a relatively good year for earnings, the fall in security prices resulted in an appreciable degree of depreciation on investment trust portfolios. Thus, three trusts which issued their reports to Nov. 30, 1937, showed a depreciation of investments, taken at current market values compared with book values, of 14 per cent., 15½ per cent., and 28·4 per cent., although 12 months earlier their portfolio values were unimpaired. Statistics of new capital raised by investment trusts during 1937 are not available. Numerous small issues were made to existing holders of investment trust stocks, and three new companies were also formed by direct issue of securities to a total of £3¼ millions to the public. They were not, however, very readily subscribed. In addition, five new trusts were created as a result of offers of conversion to holders of unit trust securities, who accepted to the extent of some £2,650,000 of nominal capital. (R. E. BD.)

IONOSPHERE, THE. The uppermost layer of the earth's atmosphere is called the Ionosphere. It is bounded below by the Stratosphere, and extends upwards as far as the altitudes at which the last traces of gases can be observed, that is, 120–140 km. (75–85 miles). At its lowest level, the temperature is the same as in the Stratosphere, that is, about 50° below zero C. (about 60° below zero F.) ; as the altitude increases, the temperature goes up, probably to as much as 30° above zero C. (about 90° above zero F.)—possibly more, but no direct measurements are available. To what extent helium and hydrogen predominate in the Ionosphere is still a disputed question. But we do know that there is present in the Ionosphere a great deal of ozone. This absorbs the ultra-violet rays of the sun, which are so injurious to living things. The Ionosphere is strongly ionized (hence its name) at its upper levels by various solar rays and by cosmic radiation. For this reason it conducts electricity and reflects wireless short waves (Heaviside layer). This makes possible broadcasting round the world by means of low-energy transmission of short waves.

Shooting stars and the aurora borealis are present in the upper layers of the Ionosphere. (A. PI.)

IOWA : *see* UNITED STATES OF AMERICA.

IRAN, known before March 1935 as Persia, a country of western Asia bounded to the east by India and Afghanistan, to the north by the U.S.S.R., to the west by Iraq and Turkey, and to the south-west and south by the Persian Gulf and Arabian Sea ; ruled since 1926 as a constitutional kingdom by Reza Shah Pahlevi (*b.* 1878). Area, about 628,000sq.m. Estimated population, *c.* 15 millions, some 2 to 3 millions being nomadic. The majority are Shiah Mohammedans, but there are some 50,000 Armenians and a smaller number of Nestorian Christians, about 45,000 Jews, and a number of Bahaists and adherents of other faiths. Education, formerly almost entirely in the hands of the religious organizations, is being rapidly developed ; the number of schools is said to have increased sixfold in ten years. The largest city is Teheran, the capital, with over 360,000 inhabitants ; it is followed by Tabriz (220,000), Meshed (140,000), Shiraz (120,000), and Isfahan (100,000). There were no constitutional developments or important events in 1937, but the country's general progress and modernization was continued. In July, a mutual non-aggression pact was signed at Saadabad with Iraq, Turkey, and Afghanistan, an agreement having been signed with Iraq a few days previously settling the long-standing frontier dispute as to the navigation of the Shatt-el-Arab.

Agriculture is not of great importance, in view of the desert nature of much of the country ; there are mineral resources of value, not yet extensively worked, save for the oil-fields in the south. Manufactures, save for carpets, are few, though there is some development of the textile industry, especially cotton. Railways and roads are being rapidly constructed: there are about 600m. of the former.

The unit of currency is the rial, of 100 dinars: the gold standard is suspended, and the silver rial—nominal value 2·4*d*.—exchanges at 80 to the pound sterling. The 1937–38 revenue and expenditure are estimated at £15,625,000 and £15,600,000. Revenue arises mainly from customs duties, oil royalties, State monopolies, and land taxes. Foreign trade is (since 1931) a State monopoly: exports in 1936 were valued at *c.* £24 millions, imports at *c.* £13 millions. Besides several other banks, there is a National Bank, the Banque Mellié Iran, with the sole right of note issue, which was formerly held by the British-owned Imperial Bank of Iran. The standing Army, numbering about 100,000, is well equipped, and a small fleet operates on the Persian Gulf.

IRAQ, an Arab state of the Near East, between Iran, Syria, and Arabia, watered by the Tigris and Euphrates; an independent kingdom since 1932, when the British mandate was terminated. Ruler, Ghazi I (*b.* 1912; succeeded 1933). Area, *c.* 116,500sq.m. Population (est. 1932), 2,856,000. Baghdad, the capital, has about 261,000 inhabitants; other large towns are Mosul (*c.* 100,000) and Basra (*c.* 53,000). The people are almost entirely Mohammedans, the Shiahs somewhat outnumbering the Sunnis: disputes between the two sects are frequent. There are over 100,000 Christians, and about 75,000 Jews. Arabic is the official and general language. There is as yet no university; over 600 primary schools have some 90,000 pupils, and there are 28 intermediate and 12 secondary, technical, and special schools.

Agriculture is extensively carried on, wheat, barley, rice, and dates being the principal crops; oil is the chief mineral product, and wool is produced for export. Manufactures are not much developed. There are some 900m. of railway, and roads are being opened up over most of the country, about 5,000m. having been constructed since 1918. The excellent airport at Baghdad is served by Imperial Airways, K.L.M., and other lines.

The standard of currency is the dinar, equivalent to the pound sterling. Revenue and expenditure in 1936–37 amounted to £5,985,000 and £6,140,000 respectively; imports were valued at about £7,200,000 and exports at £3,484,000. An Agricultural and Industrial Bank under government auspices exists; the Ottoman Bank and other eastern banks also operate. The British Air Force has stations in the country; the Iraqi Air Force and Army combined have a strength of 20,500, and compulsory service is in force. The country is policed by about 9,000 officers and men.

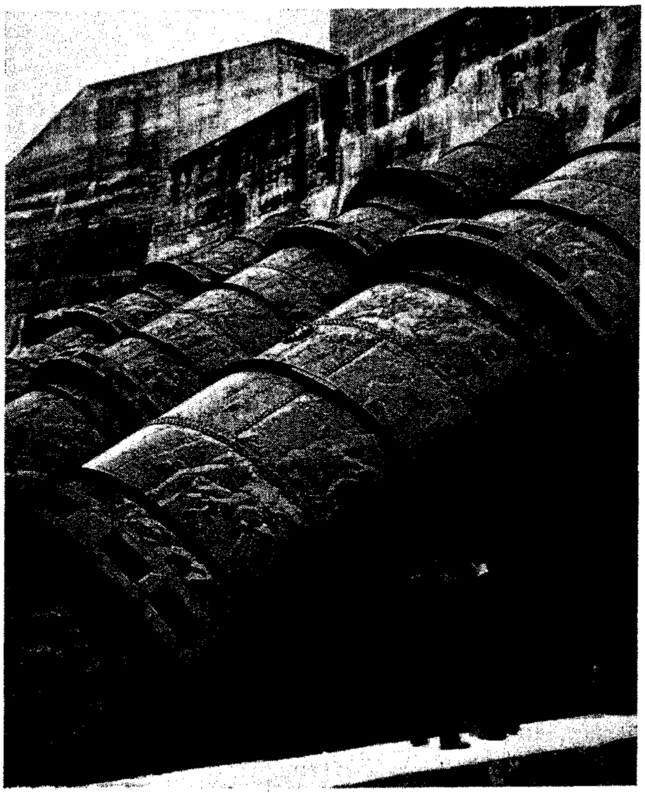
In Jan. 1937, Seyyid Kikmet Sulaiman, premier since the *coup d'état* of Oct. 1936, began a campaign for army reorganization, extending the Conscription Law to the Yezidis. Towards the end of February rumours arose that a revolutionary movement against the government of Baqir Sidqi and Hikmet Sulaiman was afoot, and arrests were made among the Baghdad garrison. The cabinet was reorganized in June, four ministers resigning on the ground of disapproval of Army methods; and on Aug. 12 General Baqir Sidqi (*q.v.*), chief of staff, together with the head of the Air Force, was assassinated at Mosul aerodrome by an Iraqi soldier. On the 16th the premier resigned, and a new moderate cabinet was formed by Seyyid Gamil al Madfai, who had been premier three times previously, the new premier taking also the defence portfolio. The Iraqi government was party to the non-aggression treaty of Saadabad (*see* ISLAM). A public works loan for £1 million was issued in London in July. After the publication of the plan for the partition of Palestine, the government protested against that policy in a note to the League of Nations dated July 30, upholding the idea of an independent, undivided, and Arab Palestine.

IRELAND, NORTHERN: *see* NORTHERN IRELAND.

IRISH FREE STATE. Under the Constitution, operative since Dec. 29, 1937, the name 'Irish Free State', given by the Treaty of 1921 to the 26 counties of Southern Ireland, is to be replaced by that of 'Eire', or Ireland. The territory remains unchanged. Capital, Dublin. Ruler, a president (*Uachtarán*), to be elected by universal suffrage and to hold office for seven years. National flag, the tricolour of green, white, and orange.

Area and Population.—Area: 26,592sq.m. Population (1936): 2,965,854, a decline of 4·8 per cent. since 1926. On the other hand, the population of towns with over 10,000 inhabitants has increased by 9·3 per cent. The estimated emigration for 1937, mainly to Great Britain, is about 40,000. Roman Catholics numbered (1926) 2,751,000; Protestant Episcopalians 164,000; Presbyterians 32,000; Methodists 11,000; Jews 4,000; total non-Catholics 221,000. In 1926, the total of native Irish speakers was 544,000, a decline of 10,000 since 1911. Irish (Gaelic) is compulsory in all schools and is increasingly used as a medium of instruction.

Educational System.—Primary education is compulsory to the age of 14. Schools are under episcopal management, but the State controls programmes and pays teachers. Secondary education is voluntary, mainly given by diocesan schools and religious orders, with state-conducted examinations. Since the Vocational Education Act (1930), great progress has been made in technical education. The



Fox Photos Ltd.]

SHANNON POWER SCHEME. HUGE PIPES CONNECTING THE DAM WITH THE POWER HOUSE NEAR LIMERICK

Universities are: Trinity College (University of Dublin), and the National University of Ireland, with three Constituent Colleges at Dublin, Cork, and Galway, and a Recognized College for clergy at Maynooth.

Leading Cities.—Dublin, pop. 472,000; Cork, 80,713; Limerick, 41,385; Dún Laoghaire (Kingstown), 39,762; Waterford, 27,962; Galway, 18,285. By the Local Government (Galway) Act, 1937, Galway became once more a municipality, with mayor and corporation.

History.—The titles 'Executive Council' and 'Minister' are now abolished, and those of 'President' and 'Vice-President' replaced by *Taoiseach* and *Tánaiste*. Taoiseach and minister for External Affairs: E. de Valera; Tánaiste and minister for Local Government: S. T. O'Kelly; members of government: P. J. Rutledge (Justice), S. MacEntee (Finance), F. Aiken (Defence), J. Ryan (Agriculture), S. Lemass (Industry and Commerce), T. Derrig (Education), G. Boland (Lands), O. Traynor (Posts and Telegraphs).

The Constitution of Eire was approved by plebiscite, July 1, 1937. Voting: for, 685,105; against, 526,945. In many respects it re-enacts the Free State Constitution of 1922, the principal changes being: the institution of a president as head of the State, and the restoration of a senate of 60 members, 11 nominated by the taoiseach, 6 elected by university graduates, and 43 from vocational panels by a joint electorate made up of the Dáil and a selected number of County Councillors. There is to be a Council of State with advisory functions. No mention is made of the Treaty of 1921 nor of the King. Article 29 empowers the government to use for certain external purposes the organs of those States with which Eire is for the time being associated. The general election, held also on July 1, 1937, gave 69 seats to Fianna Fáil, 48 to Fine Gael, 13 to Labour, and 8 to Independents. This left Fianna Fáil in a minority of one, but they retain the support of Labour on most questions. The most important legislation of 1937 was the new Constitution. An Act to provide Widows' and Orphans' pensions was passed. It was announced that ministers were now accepting the salaries fixed by the previous government, and the whole question of their emoluments was submitted to a committee. Following the abdication of King Edward VIII, the Executive Authority (External Relations) Act, 1936, now embodied in article 29 of the Constitution, was passed. The Free State was not represented at the Imperial Conference, 1937. In Jan. 1938, Irish and British representatives met in London to examine all outstanding differences.

Trade and Communications.—Agricultural exports to Great Britain, 1937, were £17,430,017. The area under tillage was 1,599,100 acres. Cattle numbered 3,963,900; sheep, 2,988,300; pigs, 956,000; all showing considerable decreases on 1936. In 1937 a minimum wage (24*s.* a week) was fixed for agricultural labourers, and control boards were set up for cereal crops and butter. The year 1937 saw record progress in Irish manufactures. Apart from many new factories, there were established industrial alcohol plants, an oil refining company, and cement works. The value of Ireland's industrial output has increased by 60 per cent. since 1932.

Imports (Dec. 1936–Dec. 1937), £44,126,363.

Exports, £22,241,292. Increase in adverse balance, £3,870,558.

Transport, etc.—The most important event of 1937 was the series of transatlantic flights from Foynes to Newfoundland. An Irish company has been formed to cooperate with Imperial and Pan-American Airways. Broadcasting is controlled by the department of Post and Telegraphs. Early in 1937 the number of licences passed 100,000. A short-wave station is being built at Athlone.

Finance and Banking.—Estimated revenue for 1937–38: £35,841,000. This includes £3,760,000 to be borrowed. There has been an increase in expenditure since 1931–32 of £7½ millions. Tax revenue, 1936–37: £25,287,000. Income-tax, £4,738,000. Customs, £10,016,000. Land annuities withheld from Great Britain accounted for £1,325,000.

Banking is regulated by the Currency Act, 1927, under which currency is 'pegged' to sterling. Six banks issued fiduciary notes for £5,028,764 from Sept. 1936 to Sept. 1937. Currency notes reached the record figure of £8,953,657.

Defence Forces.—Regular Army: 5,751. Reserve: 5,563. Volunteer Force: 9,810. There is no Navy, and a very small Air Force. The police (Gárda Síochána) number 7,646.

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IRON AND STEEL. Discussion of the iron and steel industry can for the most part be handled more satisfactorily subdivided into its three main headings—iron ore, pig iron, and steel. The production tables found below under each of these headings include all countries in which production of the commodity in question has exceeded one million tons. This coverage in general accounts for 93–98 per cent. of the totals. In all three the greater extent to which the depression has affected the United States industry, in comparison with that of the rest of the world, is clearly evident in the much smaller output in the low year and the lesser extent to which recovery had attained in 1936; while declines ranged from 76 per cent. to 87 per cent. in the United States, and recoveries reached 67–85 per cent., the corresponding declines for the rest of the world were 41–49 per cent., with recoveries to 96–123 per cent. of 1929. Iron ore suffered the worst and recovered the least, while steel declined the least and recovered the most, with pig iron intermediate between these two.

A point of considerable technical interest is the ratio of production between pig iron and steel. In 1900 this was 100 : 73, gradually changing on the one side with the decline of uses for pig iron other than steel manufacture (particularly the decline in the use of iron castings), and on the other side with the growth of the practice of utilizing more and more scrap in the production of steel, thus increasing the output of steel without affecting that of pig iron. The two reached a balance about 1915, and stood at 100 : 122 in 1929 and 100 : 135 in 1936; in 1937 the ratio dropped to 100 : 130, probably because of shortage of scrap to maintain the former rate of increase.

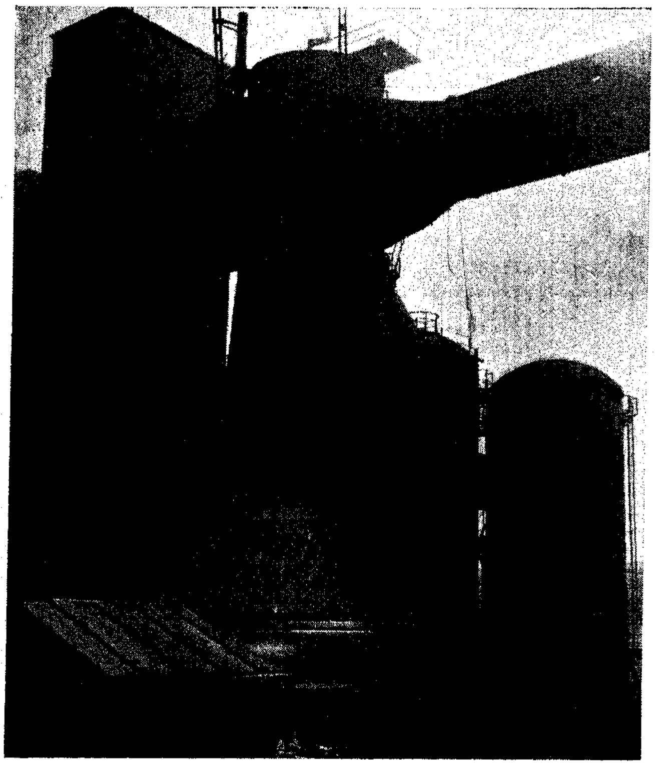
Incidentally, attention might be called to the fact that the preliminary estimates for the outputs of pig iron and steel for 1937, given in the tables, are American estimates; European estimates are somewhat higher for both, but it is still too early to determine which is the more nearly correct.

Iron Ore.—World production of iron ore decreased 64 per cent. from the 1929 high to the 1932 low level, and recovered to 85 per cent. of the 1929 level in 1936. Three countries, the United States, France, and the Soviet Union, contribute nearly two-thirds of the total, while the other two of the leading iron and steel producers, the United Kingdom and Germany, add another 10 per cent. By the end of 1936 the United States had recovered to only 67 per cent. of the 1929 level, but preliminary reports for 1937 promise a closing of the gap when the final figures for the year become available. French production is still well below the former high level, but the United Kingdom and Germany have shown better recovery, and in the Soviet Union heavy increases in output have been made.

World Production of Iron Ore
(In millions of long tons)

	1929	1932	1934	1935	1936
NORTH AMERICA:					
NEWFOUNDLAND .	1·5	0·1	0·6	0·6	0·9
UNITED STATES .	73·0	9·8	24·6	30·5	48·8
SOUTH AMERICA:					
CHILE . . .	1·8	0·2	0·9	0·8	1·3
EUROPE:					
AUSTRIA . . .	1·9	0·3	0·5	0·8	1·0
CZECHOSLOVAKIA .	1·8	0·6	0·5	0·7	1·1
FRANCE . . .	49·9	27·2	31·5	31·6	32·7
GERMANY . .	6·3	1·3	4·3	5·2	
LUXEMBURG . .	7·5	3·2	3·8	4·1	4·8
SPAIN . . .	6·4	1·7	2·1	2·6	
SWEDEN . . .	11·3	3·2	5·2	7·8	11·0
U.S.S.R. . . .	6·9	12·0	21·4	26·6	27·5
UNITED KINGDOM .	13·2	7·3	10·6	10·9	12·7
ASIA:					
CHINA . . .	2·6	2·2	2·5		
INDIA . . .	2·4	1·8	1·9	2·4	2·6
MALAYA . . .	0·8	0·7	1·1	1·4	1·7
AFRICA:					
ALGERIA . . .	2·2	0·5	1·3	1·6	1·9
MOROCCO (FRENCH) .	1·2	0·2	0·8	1·1	1·1
AUSTRALIA . . .	0·9	0·6	1·2	1·9	
World total . . . (including all sources)	200·0	75·0	118·7	138·7	170·0

Exports of iron ore from the United States are small, being of the order of 1 per cent. of production ; imports are somewhat larger, and average about 5 per cent. of production, about one-half of which comes from Chile and one-fifth from Cuba. The Russian industry is even more nearly self-contained than that of the United States. Germany produces only about one-quarter of her requirements and imports three-quarters, while the United Kingdom produces about two-thirds and imports one-third ; Sweden exports almost her entire output, mainly to Germany, and about one-half of the French output is exported to Belgium and Germany.



Iron and Steel Industry]

THE NEW BLAST FURNACE AT SKINNINGROVE, YORKS

Pig Iron.—World production of pig iron dropped 60 per cent. between 1929 and 1932, recovering to slightly better than the 1929 level in 1937. Three of the five leading nations, the United States, Germany, and the Soviet Union, account for two-thirds of the total output, and the United Kingdom and France for another 15 per cent. Of these only the Soviet Union has shown a marked increase over 1929 ; Germany stands at about par, while the others are all low. The apparent increase in Germany and much of the decrease in France is explained by the transfer in 1935 of the Saar iron-fields from France to Germany.

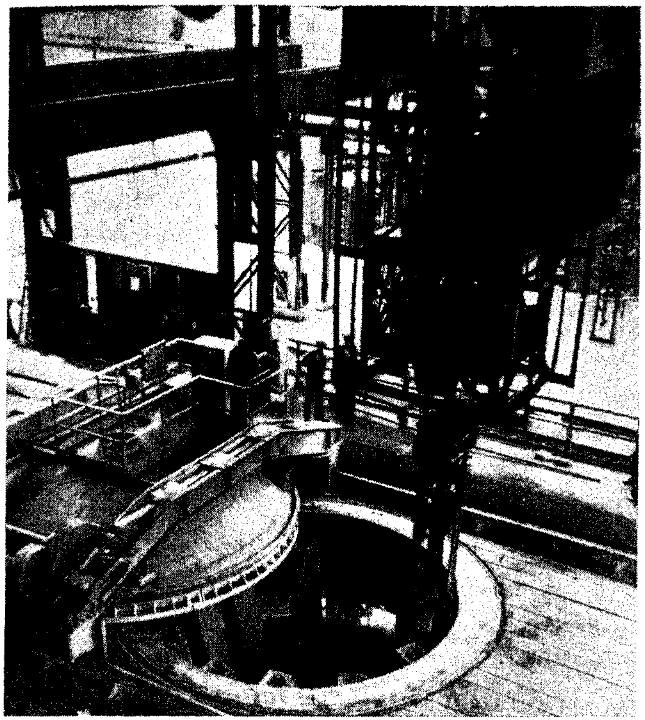
World Production of Pig Iron
(In millions of long tons)

	1929	1932	1935	1936	1937
NORTH AMERICA:					
CANADA . . .	1·2	0·2	0·7	0·7	1·0
UNITED STATES .	42·6	8·8	21·4	31·0	37·3
EUROPE:					
BELGIUM . . .	4·0	2·7	3·0	3·2	3·7
CZECHOSLOVAKIA .	1·6	0·4	0·8	1·1	1·6
FRANCE . . .	12·3	6·8	6·0	6·1	7·8
GERMANY. . .	13·2	3·9	12·3	15·1	15·7
LUXEMBURG . .	2·9	1·9	1·8	2·0	2·5
U.S.S.R. . . .	4·0	6·3	12·3	14·1	14·4
UNITED KINGDOM .	7·6	3·6	6·4	7·7	8·5
ASIA:					
INDIA . . .	1·4	0·9	1·5	1·5	1·8
JAPAN . . .	1·5	1·5	2·7	2·2	3·2
World total . . . (including all sources)	97·2	39·2	73·5	91·0	101·8

Exports of pig iron from the United States are almost non-existent and imports are negligibly small. Russian imports are apparently small and exports take about 5 per cent. of the output. In Germany and France imports average about 1 per cent. and exports about 2 per cent. of production, while the United Kingdom imports are 4 per cent. and exports 2 per cent. In all cases, the amounts are so small as to be of little practical importance. In some cases, however, considerable amounts of scrap metal are imported, to take the place of pig iron in the production of steel.

Steel.—A decline of 58 per cent. in the world steel production between 1929 and 1932 was cancelled in 1936, when an output of 122,600,000 long tons set a new high record, which in turn was replaced by another record output of 132,500,000 tons in 1937, an increase of 8 per cent. over 1936 and of 11 per cent. over 1929. Of the five leading producers, the United States and France have not yet regained the 1929 level, while the Soviet Union, the United Kingdom and Germany, have surpassed it. It may be noted, however, that, as with pig iron, much of the apparent German increase and of the French decrease are due to the transfer of the Saar in 1935 from France to Germany. Of the smaller producers listed in the table, every one has surpassed the 1929 level of production or has approached it very closely.

The United States steel industry is practically independent of imports, and exports amount to only about 7 per cent. of the production. Among the European producers international trade plays a much larger part in the industry, except for the Soviet Union, in which exports are small and



Iron and Steel Industry]

CIRCULAR SOAKING PIT, RECENTLY INSTALLED IN WELL-KNOWN WORKS, SHOWING COVER REMOVED FOR REMOVAL OF INGOTS

WORLD PRODUCTION OF STEEL
(In millions of long tons)

	1929	1932	1935	1936	1937
NORTH AMERICA:					
CANADA . . .	1·4	0·3	0·9	1·1	1·4
UNITED STATES .	56·4	13·7	34·1	47·8	50·7
EUROPE:					
BELGIUM . . .	4·0	2·7	3·0	3·1	3·9
CZECHOSLOVAKIA .	2·2	0·7	1·2	1·5	2·2
FRANCE . . .	11·7	6·9	6·2	6·6	7·7
GERMANY. . .	16·0	5·7	15·8	18·9	19·4
ITALY . . .	2·1	1·4	2·2	2·3	2·1
LUXEMBURG . .	2·7	1·9	1·9	2·0	2·4
POLAND . . .	1·4	0·5	0·9	1·1	1·4
SWEDEN . . .	0·7	0·5	0·9	1·0	1·1
U.S.S.R. . . .	4·6	5·7	12·3	16·1	17·1
UNITED KINGDOM .	9·6	5·3	9·9	11·7	12·9
ASIA:					
JAPAN . . .	2·3	2·4	4·3	4·9	5·7
World total . . (including all sources)	118·1	49·9	97·5	122·6	132·5

imports run about 4 per cent. The United Kingdom has steel imports of about 12 per cent. and exports of 19 per cent. of production, leaving a net export of 7 per cent. Germany imports 3 per cent. and exports 19 per cent., or a net export of 16 per cent. France imports 2 per cent. and exports 33 per cent., making a net export of 31 per cent. The Economic Union of Belgium and Luxemburg are still heavier exporters, sending out 44 per cent. of the combined output. Incidentally, these European percentages, though still fairly large, have been decreased by about one-half during the past decade by export and import restrictions and embargoes that have been put into effect in these and other countries to which exports were formerly made. (*See* also METALLURGY.) (G. A. RO.)

IRRIGATION. In *Great Britain*, in so far as 'irrigation' includes its obverse, land drainage and flood protection, great advances are made in that direction every year as a result of the Land Drainage Act of 1930. The Fenland floods are being brought under control by improvements in individual rivers tending to strengthen their defences against floods and tides. Such schemes are often combined with improvements to navigation, as is exemplified by the works now in progress on the river Lea and the recently completed 'Dog in a Doublet' lock on the river Nene, near Peterborough. On the river Severn, 5½ miles of the channel are being widened, while, to facilitate the discharge of flood waters, many old weirs and sluices are being remodelled or replaced.

In *Australia*, the effects of denudation on the upper reaches of the Murray river have materially altered its régime, its discharge during the six winter months being now three times as much as during the summer months, whereas formerly it used to be practically uniform throughout the year. Consequently, in summer the small lakes, Alexandrina and Albert, at the river's mouth, become salt, thus damaging the irrigation, the grazing, and the potable water supplies round their shores. Five simple barrages are therefore being built to exclude the salt water, at an estimated cost of £545,000.

The Water Conservation and Irrigation Commission of New South Wales is establishing various irrigation schemes, having at its disposal the 300,000 acre-ft. of water stored by the Wyangala Dam on the Lachlan river, that was completed in 1935.

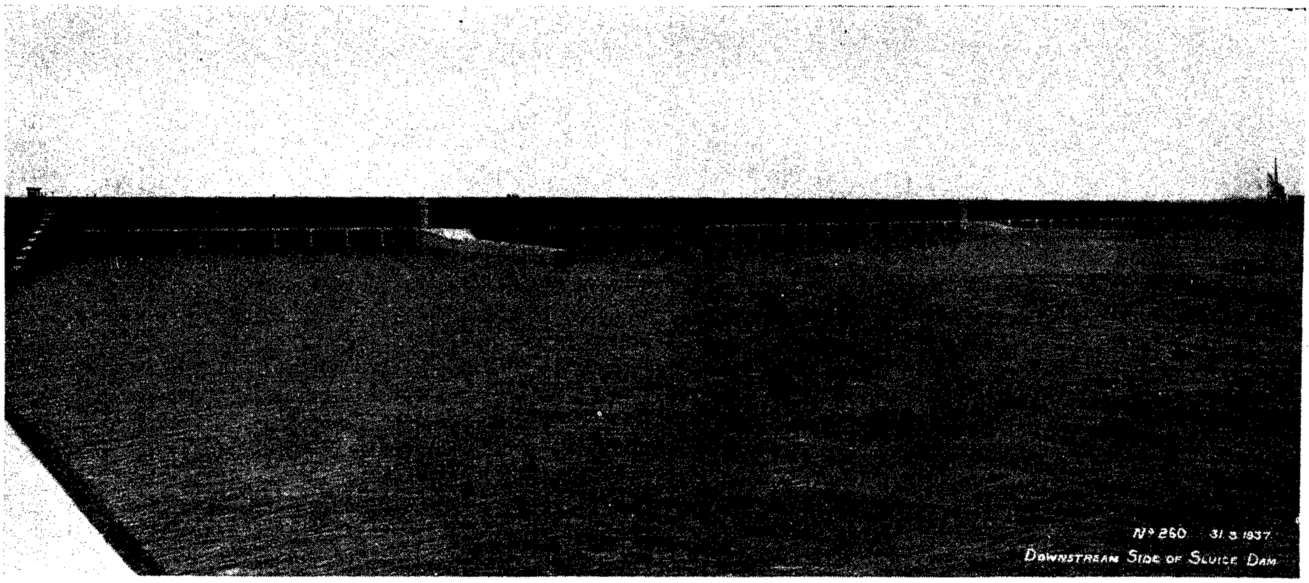
In *India*, over 50 million acres are irrigated under various systems, and hence research is actively carried on. The following methods of lining canals to prevent seepage losses have been found unsatisfactory, as the cost is heavy in relation to life: clay puddling, cement slurry, cement mortar, concrete slabs, oiled paper, and bituminous material. A chemical method under trial, which promises well, adds sodium carbonate to soils containing available calcium, thus turning the permeable calcium clays into impermeable sodium clays, which easily become puddled.

Work has begun on the Haveli Irrigation Project, which is to provide perennial irrigation for 700,000 acres and non-perennial for 860,000 acres at a cost of £3,750,000, of which about 40 per cent. is taken by a barrage on the Chenab river, below its junction with the Jhelum river. The Thal Project, depending on the Indus river, in the Mianwalli District of the Punjab, is approved at a cost of £3 millions.

New Zealand is developing irrigation in the South Island by making a canal 34 miles long, taking from the Rangitata river to water land in Ashburton County. The project is estimated to cost £135,000, and will take three years to complete.

In *South Africa*, the Vaal-Hartz Rivers Project stores Vaal river water some 20 miles south of Johannesburg, which then flows for 360 miles along the Vaal river to be diverted by a barrage into a four-mile long cutting which goes through the watershed of the Hartz river into a canal system in the latter's valley, serving about 100,000 acres. The total cost, estimated at £4 millions, includes £900,000 for the dam, which forms a reservoir holding 800,000 acre-ft., that could be more than doubled at comparatively small additional cost. The dam across the main channel of the Vaal river is concrete (length 1,700ft. and greatest height 160ft.), while an earth-bank closes a side branch. The latter has no impermeable core-wall, the head being small, and reliance therefore placed on the length of travel of the water to stop creep. (F. NE.)

United States.—Throughout the western United States,



By permission of the Egyptian Government]

THE GEBEL AULIA DAM

where irrigation is extensively practised, the precipitation of 1937 was generally more abundant than that of the preceding six years. This was sufficient, not only to supply current irrigation requirements, but also to replenish in part depleted reservoir storage. The water shortages experienced during the dry years stimulated the investigation of the possibilities of the more effective conservation and utilization of the water resources of the arid region. Acute water shortage conditions along the Rio Grande in New Mexico and West Texas called for a detailed and comprehensive investigation of the upper basin of that stream during 1936 and 1937 under the auspices of the National Resources committee and the states of Colorado, New Mexico, and Texas. Similarly, water shortages in eastern Colorado led to an exploration of the possibilities of the trans-mountain diversion of water from the upper tributaries of the Colorado on the western slope of the Rocky Mountains to supplement the limited supplies in the upper tributaries of the South Platte and the Rio Grande.

Among the trends that were notable during 1937, the following may be mentioned: (1) a substantial extension of the work of making seasonal surveys of snow conditions in the mountain areas drained by irrigation streams as a basis of forecasting prospective stream flow; (2) progress in diverting and spreading the flood waters of mountain streams to replenish the ground waters of alluvial valleys, which waters are extensively used for irrigation by means of deep wells; (3) the extensive migration of families to irrigated lands from dry farmed areas in which drought conditions were severe during 1934 and 1936; (4) the progressive development of additional land in established irrigated districts through the more efficient use of available water supplies and the re-use of waters hitherto wasted as drainage from irrigated lands; and (5) in connexion with this last there was increasing attention given to the quality of irrigation and drainage waters in relation to the effects of their dissolved salts on the productivity of irrigated lands.

While no new large irrigation project was completed or opened to settlement during 1937, progress was made on large irrigation works, such as the Imperial dam with canals to the Imperial valley in California and the proposed Yuma-Gila project in Arizona; the Central valley project in California; the Grand Coulee dam on the Columbia river in Washington; and the Kendrick (Casper-Alcova) project in Wyoming. Because of adverse economic conditions, there was little construction on non-Federal projects during the year; but some work was done in reconditioning existing distribution systems and in extending and improving drainage facilities on such projects. It is estimated that the aggregate area of irrigated land in the western United States is somewhat in excess of 18 million acres. This acreage has not changed materially for several years, because such additions as have been made by new construction or extensions have been offset by losses due to water shortages or to increasing salinity in older areas. (X.)

In *Algeria*, rock-fill dams have been successfully used, being made watertight either by facing them with an impermeable apron or by including an impermeable core-wall of reinforced concrete. Two such dams have been built in the Province of Oran, one at Bakkhada, 148ft. high, costing 121 million francs (about £800,000), the other at Bou-hanifia, 180ft. high, costing 325 million francs (about £2,200,000).

In *China*, the chief projects lately completed include the Saratsi Project in the Suiyuan Province, some 450 miles north of Peking, which takes water from the Yellow River to supplement the ordinary rainfall, and three projects completed by the Shensi Provincial Government on the Wei, King, and Lo Rivers, all in the Yellow River system, protecting about 300,000 acres in all. One of these, the Wei Pei Project, revives irrigation in a district where the first works of this nature date back to 240 B.C.

Egypt has built a reservoir on the White Nile in the Sudan, to be filled with the silt-free water of that river while the Main Nile is in flood and Egypt has water to spare. The requisite dam, at Gebel Aulia, about 25 miles south of Khartoum, cost about £E.2 millions (£E.1 = £1 0s. 6*d*.), not including land compensation (£E.750,000) and some other charges. It is 3 miles 1 furlong long, with maximum height 60ft.; it has 60 sluices, 10 being 'blind' for the present, and a lock 60ft. wide. The work is built on a wide base, so that it can easily be heightened by about 9ft. The Reservoir is about 200 miles long when full, with an average width of about 2½ miles; it stores about 3,100 million cubic metres of water but, owing to evaporation from the reservoir and seepage losses in transmission down the Nile, only about 2,200 millions reach Egypt, where they will suffice to extend perennial cultivation to about 550,000 feddans (1 feddan = 1$\frac{1}{18}$ acres).

The remodelling of the Assiut Barrage, which serves Middle Egypt, to hold a head of 14ft. instead of its present 10ft. 8in. was begun in 1934, and will shortly be finished, at a total cost of about £E.1 million.

The Delta Barrages, serving Lower Egypt, are nearly 100 years old, and are being replaced (the old structures being retained as road bridges) by two new barrages, to be called the Mohamed Ali Barrages, sited a little downstream of the old works. These barrages are near the heads of the Damietta and Rosetta branches of the Nile, about 15 miles north of Cairo; they will have 34 and 46 sluices respectively of 8 metres (26ft. 8in.) width, and each will have a lock. They will be able to maintain a level in summer 2ft. 2in. higher than before, *i.e.* 16·35 metres above Alexandria mean sea-level. The total cost will be £E.3 millions, including some subsidiary works, and they are to be finished in 1939.

In the Sudan, the area commanded by the Gezira Irrigation Scheme, depending on the Sennar Dam on the Blue Nile, was in 1937 extended by over 31,000 acres to a total of nearly 900,000 acres.

In *Iraq*, the Kut Barrage on the river Tigris at Kut-el-Amara is to provide irrigation for about 1¼ million acres by maintaining a maximum head of 5·35 metres. The work is to cost £1,150,000 and to be finished in 1938.

In *Russia*, the Greater Volga Scheme includes the remodelling of the rivers Dnieper, Don, and Svir to produce hydro-electric power on a colossal scale, and also to make possible the eventual irrigation of 87 million acres of semi-arid and waste lands. A portion of this, the Kuibyshev Hydro-electric Power and Irrigation Development Project, is included in the third Five-Year Plan, and provides for the irrigation of 6¼ million acres in the South Volga area. (*See* also DAMS) (F. NE.)

ISHERWOOD, SIR JOSEPH WILLIAM, British ship designer; born June 23, 1870; died in London, Oct. 24, 1937. He was best known for developing the system of longitudinal framing now used throughout the world in the construction of cargo vessels and tankers (*see Ency. Brit.*, vol. 20, p. 534). His most recent development was the 'arcform' used in building the first streamlined freighter in 1934 for the purpose of reducing the fuel costs necessary because of the wasteful wake of deep-draughted ships.

ISLAM, the religious system founded in the seventh century A.D. by the Arab prophet Mohammed, now followed by perhaps some 210 million people, mainly in Asia and North and East Africa, though there are some 5 million Mohammedans in Europe (Turkey and the Balkan States) and about 20,000 in North America. About one-half of the Mohammedans throughout the world are subjects of Great Britain, France being, in virtue of her African possessions, the second greatest Mohammedan power; the attainment of sovereign status by Egypt has led to a movement in that country to secure it the acknowledged primacy in the world of Islam, and one party is desirous that the King of Egypt should assume the title of Caliph, or 'Commander of the Faithful', which has been virtually in abeyance since its abolition in Turkey in 1924. The formation of an Italian Empire in north and east Africa has made Italy a Mohammedan power of importance, and in recent years she has intensively cultivated Mohammedan friendship both in her own dominions and in Egypt, Arabia, Palestine, and other Islamic lands, in an apparent effort to compete with Great Britain as the friend of Islamic, particularly Arab, aspirations (*see* ARABIA); Mussolini has even hailed himself as 'Protector of Islam'. On July 8, 1937, was signed at Saadabad in Teheran a mutual non-aggression pact between four of the principal Islamic countries—Iraq, Iran, Turkey, and Afghanistan. The world of Islam has been largely moved by the course of events in Palestine (*q.v.*), and the age-long rivalry between Mohammedan Arab and Jew, fanned to a flame by recent events in that country, has helped to foster Italy's schemes for extending her influence. Pan-Arabism, the movement for giving greater expression to the community of ideals and culture among Arabic-speaking peoples, is rapidly increasing, especially in Iraq, Syria, Palestine, and the adjoining lands, though at present it finds its greatest urge rather in its negative attitude of hostility to Zionism and to the extension of Jewish influence in Palestine than in any positive scheme of Islamic or Arab federation. Syria is perhaps the strongest centre of the Pan-Arab movement, and in Sept. 1937 a Pan-Arabic congress, attended by delegates from all Arab lands except Yemen, met at Bloudan and protested strongly against the proposed partition of Palestine. After a series of Arab outrages at Nazareth in September, the government of Palestine found it necessary on Oct. 1 to deprive the Grand Mufti (*q.v.*) of Jerusalem, the spiritual head of Palestinian Islam, of the Presidency of the Moslem Council; he took refuge shortly after in Syria. Turkey and Iran, States with independent historical backgrounds, have been affected in very slight degree by the Pan-Arab movement, and the Moslem population of the Lebanon has also tended to remain deaf to Pan-Islamic endearments.

In India, there were fewer Hindu-Muslim clashes than usual during 1937, and in several provinces, after the April elections, Muslims united with Hindus to form ministries.

The Nizam of Hyderabad having provided a large sum towards the provision of a second Mosque in London for the use of the Mohammedans in Great Britain, roughly 3,000 in number, the foundation-stone of the building—which will, it is claimed, be on completion a 'miniature Taj Mahal'—was laid in Kensington on June 4 by the Prince of Berar, in the presence of representatives of Egypt, Turkey, Iran, Saudi Arabia, and other Muslim States. A mosque belonging to the Ahmadiyya Community, but open to all Muslim sects, was opened at Wimbledon, south-west London, in 1926, and the only other public mosque in the British Isles is that at Woking, Surrey, which came into use during the World War and is managed by a private trust.

ISLE OF MAN, island in the Irish Sea, between Great Britain and Ireland; part of the British Empire, but governed by a local parliament, the Tynwald Court, consisting of the governor (appointed by the Crown), a Legislative Council, and a House of Keys of 24 popularly elected members. Capital, Douglas (pop. 19,329). Ruler and national flag, as for Great Britain.

Area and Population.—Area: 227sq.m. Population (census 1931): 49,308 (density, 21.7 per sq. m.).

Religion, Language, Education.—The island forms an Anglican bishopric, Sodor and Man, attached to the Province of York. In 1937 the abolition of this see and the attachment of the island to the diocese of Carlisle was mooted. English is everywhere spoken; 528 persons (1931) also speak Manx, the ancient Celtic language of the island. Education, elementary and secondary, is undertaken by the Manx government; in 1936 there were 5,545 elemetary and 1,147 higher scholars; expenditure on education (1936–37) was £75,901 (elementary) and £28,455 (higher).

Industry, Communications.—About half the island is under crops, mainly corn and grasses; there are about 1,200 agricultural holdings. Entertaining British holiday-makers is the main industry. During 1937 the Calf of Man (south-west extremity of the island) was presented to the National Trust for preservation as a nature reserve. There are 71 miles of railway and electric tramway; two airports (near Castletown and Ramsey), and daily air services to England, Scotland, and Ireland.

Finances, etc.—British currency is in use. The revenue and expenditure (1935–36) were £534,148 and £526,671 respectively; the debt is about £580,000. Ten thousand pounds per annum is contributed to the Imperial exchequer. Revenue is raised mainly by customs duties; there is a small income-tax. There is a police force of about 70.

ISOTOPES OF THE LIGHTER ELEMENTS, SEPARATION OF. The study of the differences in properties of the hydrogen isotopes and their compounds has led to an investigation of similar differences in the case of the isotopes of other light elements. Aston and Harkins changed the relative abundances of isotopes by diffusion methods, and Hevesy effected similar changes by evaporation. The problem has been attacked in recent years by using three methods:

(1) Hertz has constructed a very ingenious cascade diffusion apparatus, which makes use of many diffusion units arranged in such a way that the light fractions are fed from one unit to the preceding one and the heavy fraction from this unit to the following one. In this way it is possible to increase greatly the effectiveness of the diffusion method as compared with the simple processes used by Harkins and Aston. This method depends upon the differences in the velocity of diffusion of the isotopic constituents because of differences in molecular weights, the velocity of diffusion being inversely proportional to the square root of the molecular weight.

Hertz has used cascades consisting of as many as 50 diffusing units, and two varieties of diffused media, one porous clay tubes, and the other moving streams of mercury vapour. The latter appears to be the more easily constructed and more effective method. In this way he and others have succeeded in producing nearly pure neon isotopes of atomic weights 20 and 22, 16 per cent. C^{13} instead of approximately 1 per cent. C^{13} in natural carbon, 3 per cent. N^{15} as compared with 0·38 per cent. in the natural nitrogen, but slight concentrations only in the increased concentrations of the rarer oxygen isotopes of masses 18 and 17.

(2) The second method consists in distillation of the pure elements or their compounds. The first successful concentration of isotopes by distillation methods were made by Keesom and van Dijk in the case of neon and by Urey, Brickwedde, and Murphy in the case of the hydrogen isotopes. These distillations were carried on at low temperatures, and the differences in vapour pressures could be predicted by the use of well-known theories of the solid state. More recently the distillation of water has been used by Urey and Huffman and by Stedman to produce appreciable changes in the ratio of the oxygen isotopes. In this case, the difference in vapour pressures are very slight, the ratio of the vapour pressures at 60° C. being only approximately 1·006, and it is therefore necessary to use very efficient fractionation columns in order to secure appreciable separation. The heavy oxygen water produced in this case contained about ·85 per cent. of O^{18}. The method can undoubtedly be used for the production of much higher concentrations, and with sufficient effort can be used for the preparation of nearly pure O^{18} water.

Closely related to the distillation method are the chemical exchange methods proposed and developed by Urey and his co-workers. The process in this case is carried out in much the same way as in the case of distillation, making use of efficient fractionation columns. The gaseous phase in the case of nitrogen was ammonia gas and the liquid phase a solution of ammonium sulphate or, in general, ammonium ion. Ammonium sulphate was fed to the top of such a distillation column, ran to the bottom, where sodium hydroxide was added to the ammonium removed from the solution by distillation. The ammonia gas was turned upward through the fractionation column and escaped at the top. In this way there was enough transport of heavy nitrogen down the column, since the percentage of heavy nitrogen in the ammonium sulphate solution is greater by about 2 per cent. than the percentage of heavy nitrogen in the ammonia gas rising in the column. In this way 2½ per cent. N^{15} was produced at the bottom. This method has the advantage over the Hertz diffusion method of producing large amounts of material, but requires much longer times for the attainment of the steady states where the maximum concentration is produced. It appears possible in this case also to produce high concentrations of the rarer isotopes with sufficient expenditure of time.

(3) The third method which is coming into use for the separation of isotopes is the centrifugal method originally proposed by Mulliken and developed by Beams. This method is similar in many ways to the distillation and chemical exchange methods except that the fractionation is produced by the centrifugal action. If liquid is placed in a rapidly rotating chamber the ratio of two isotopes at the centre of rotation and at the periphery will differ depending on the speed of rotation, the difference in molecular weights, and the temperature, so that if one secures sufficiently high speeds of rotation and can keep the temperature sufficiently low, appreciable separation can be secured. At present only slight changes in isotopic composition have been produced by this method, but it appears to be capable of development into a serious competitor of the distillation and exchange reaction methods.

Two-phase counter-current methods have also been used for the partial separation of the lithium isotopes by Lewis and MacDonald. In this case, two liquids were made to flow counter-currently in a vertical tube, the lithium amalgam moving downward and an alcoholic solution of lithium chloride upward through the column. The principle of the method is much the same as that of distillation, except that the two phases are two immiscible liquids whereas in distillation the two phases are a gas and a liquid. These workers have succeeded in changing the ratio of the lithium isotopes by a factor of about 2·3. A somewhat similar method has been used by Taylor and Urey to produce slight changes in the relative amounts of the lithium and potassium isotopes. They used a solid and a liquid phase in the counter-current method, the solid phase conlisting of a zeolite and the liquid phase of a water solution of a chloride of the alkali metal.

Such partially separated isotopes are now being used in much the same way as the heavy hydrogen or deuterium in studies on chemical kinetic, biochemical, and transmutation problems. (*See* HYDROGEN, HEAVY; MATTER, STRUCTURE OF; PHYSICS.) (H. C. U.)

ITALIAN EAST AFRICA. The official name promulgated by the Italian Government to designate Italian conquests and possessions in East Africa. In addition to Eritrea and Italian Somaliland (*qq.v.*), it comprises the following divisions of Ethiopia (*q.v.*): Amhara, Harar, Galla and Sidamo, and Addis Abbaba.

ITALIAN LITERATURE. The most important literary event in Italy during 1937 has been the completion under Gentile's direction of the *Enciclopedia Italiana.*

The Italian Academy has undertaken to prepare a dictionary of spoken Italian, under Bertoni. It appointed D'Annunzio (*d.* March 1, 1938) as its new president, following the death of Marconi. Papini and Lucio d'Ambra are now members.

The year saw the centenary of Leopardi, about whom, amongst other publications, an important work was brought out by Luigi Tonelli. Bacchelli and Scarpa edited an admirable edition of Leopardi's works.

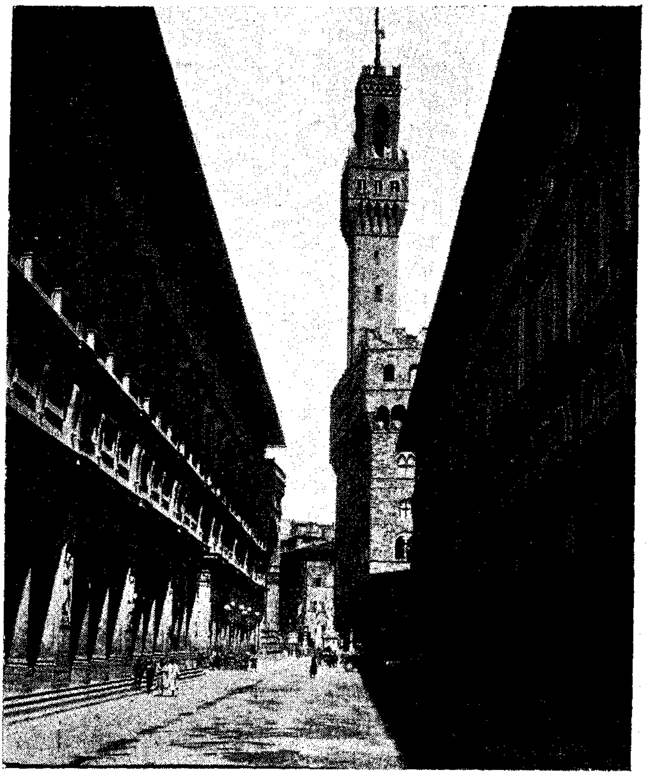
There was a considerable output of serious literature, in the fields of poetry, philosophy, and criticism, in spite of the 'book-crisis'. In poetry may be mentioned Betti's *Uomo e Donna,* Biroli's *La Nuova Fronde,* and Zoppi's *Azzuro sui Monti.*

Gentile's *Memorie italiane e Problemi della filosofia e della vita,* Spirito's *Lo spirito come ricerca,* Rensi's *Paradossi d'Estetica e Dialoghi dei Morti* are all important philosophical works. Cecchi published, in *Corso al Trotto,* a series of profound articles, and Benedetto Croce, in his review *La Critica,* had articles entitled *La Storia come pensiero e come azione,* forming an Introduction to a volume of Essays on History which were in preparation.

Among critical works should be indicated *L'Ultima Ascesa,* an introduction to the *Paradiso,* by Umberto Cosmo, already noted for his work on Dante; a study of Dostoevski by Donnini; *Pico della Mirandola,* by Anagnine; Cecchi's *Pittura dell'ottocento* and *Giotto*; and Papini's first volume of his *Storia della Letteratura italiana.* A noteworthy study of Italian-Swiss writers is found in *Scrittori della Svizzera italiana.* Pancrazi considered modern Italian literature in his *Scrittori italiani dal Carducci al D'Annunzio.* Capasso issued the first volume of his study of D'Annunzio, *La Lirica di G. D'Annunzio,* and also began another study, *Scrittori d'oggi, I, Richerche di 'Aura' poetica.* Russo's *Ritratti e Disegni storici da Machiavelli a Carducci* is a serious contribution, and Rébora has a thoughtful book, *Civilità italiana e Civilità inglese.* Two important books appeared concerning Manzoni: Nicolini's *Peste e Untori nei 'Promessi Sposi' e nella realtà storica,* and the first volume of Parenti's *Bibliografia Manzoniana,* a work of great value.

Amongst writers of fiction, Bontempelli made an experiment with his *Gente nel tempo,* published in a cheap edition, such as is sold by travelling cheap-jacks. Moretti presents a somewhat Proustian picture of modern life in *Anna degli elefanti.* Paola Drigo's important novel, *Maria Zef,* is a sad and moving tale of mountain life. There were short stories and essays by Civinini (*Trattoria di poese*), Palazzeschi (*Il Palio dei Buffi*), Mignosi, who died during the year (*Poveri Diavoli*), and Moravia (*L'imbroglio*). Lucio d'Ambra wrote the first volume of a series of literary biographies, entitled *L'Autore delle duecento commedie,* devoted to Goldoni. The publisher, Mondadori, brought out the second volume of Goldoni's works. Zavattini's *I poveri sono matti* is a humorous book. Panzini's *Il Bacio di Lesbia* was popular. Among anthologies may be noted one of the prose of Soffici, and one of poetry, *Splendore della poesia italiana,* edited by Govoni, of which at least two-fifths are given up to contemporary verse.

Political science claims many books. Some of the Duce's speeches were published under the title *La Fondazione dell' Impero,* and one of Count Ciano's *La politica estera dell' Italia.* Ivon de Begnac brought out the second volume of his excellent *Life of Mussolini*; Curcio wrote *La politica dei Romani*; Maranini *La Rivoluzione fascista nel Diritto e nell' Economica*; de Michelis *Politica internazionale del Lavoro*; Orano *Gli Ebrei in Italia*; Paolini *Sistema rappresentativo del Fascismo*; Salvatorelli *La politica della Santa Sede dopo la guerra*; and Murri *Idea universale di Roma.*



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FLORENCE

Books about the Abyssinian war were numerous, amongst them being: *L'Albo dell' Impero*; *Atti del Secondo Congresso di Studi Coloniali* of the 'Centro di Studi Coloniali' at Florence; Marshal Graziani's *Pace Romana*; Cannonieri's *Aventura tra gli Arussi*; and Starace's *La Marcia su Gondar.* (S. L. En.)

ITALY (*Regno d'Italia*), a kingdom consisting mainly of the peninsula projecting south into the Mediterranean from the mass of central Europe; the land boundaries, which reach as far north as the parallel of 46° 40′ N., being formed by France, Switzerland, Austria, and Yugoslavia. Capital: Rome. Ruler: King Victor Emmanuel III (*b.* 1869, *succ.* 1900). National flag: green, white, and red in vertical stripes, with the arms in the white stripe.

Area and Population.—Area: 119,740sq.m. Population (1936 census): 42,527,561, giving a density of 346·8 per sq.m. In 1935, the balance of emigrant over immigrant Italians was 17,938. Over 99 per cent. of the population are Roman Catholics, and there are small numbers of Protestants and Jews. Elementary education is free and compulsory up to the age of 14; secondary schools are for the most part State-maintained; and there are 21 State and 5 'free' universities. The leading cities, with 1936 population figures, are: Rome 1,148,948, Milan 1,103,960, Naples 860,176, Genoa 625,355, and Turin 623,454. (X.)

History.—The year 1937 in Italy was notable for the development of a foreign policy to which the economic, financial, and internal affairs of the nation were definitely complementary if not subservient. On its broad lines, Italian foreign policy sought to change European and world attachment to the League of Nations as an instrument of international justice, and to oppose the principle of collective security as a guarantee of peace. That programme meant cutting a path right through the post-war conception of European settlement. The events which hastened on the application of such a radical foreign policy were the bitter memories of Sanctions; misunderstandings with Britain; a declared fear of Bolshevism; events arising out of the civil war in Spain; and dissatisfaction, amongst other things, with the League's delay in making any progress with the question of Italian sovereignty over Abyssinia.

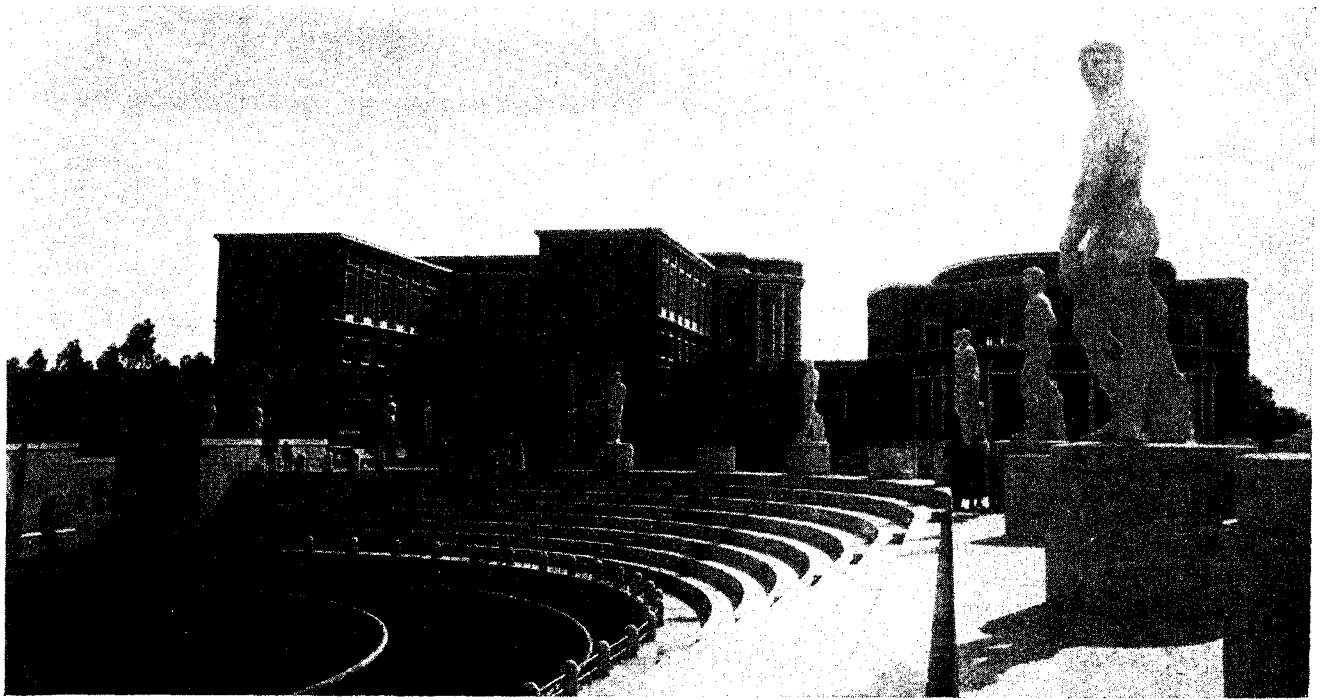
Italy's method of pursuing its foreign policy was to identify Italy with Germany in a unity of purpose, creating a ' Rome-Berlin Axis ' of common policy; to fortify the political alliances which had bound Italy, Austria, and Hungary since the conclusion of the ' Rome Protocols ' of 1934 and 1936; to use the influence of these combinations on the countries of the Little Entente; to abandon Geneva; to combat the prestige of London and the British Empire; to enter the Germano-Japanese Anti-Comintern Pact; and to perfect the nation's military strength through universal manhood training, rearmament, and a programme of national self-sufficiency.

There was nothing concrete in the year under review to reveal what Signor Mussolini (in whose hands lay all power) held in aim as a substitute for the League and collective security. Some observers believed that his ultimate goal was a revival of the Four-Power Pact idea, with or without a fundamentally revised League of Nations. Others were convinced that his plan was to build up a coalition of Fascist States in opposition to the democracies of Europe and the British Empire. There were also those in Italy who felt that their country was being reluctantly driven into the arms of Germany by the unapt diplomacy of London. Others again feared that the goal was simply an expansion of Italian Empire. It is necessary to record these speculations in this survey, because they were present as characteristic and disturbing factors in the international relations of 1937. Foreign reactions to the above-mentioned suspicions had, in their turn, reactions in Italy, creating a vicious circle of fears and distrust. Every attempt from any quarter to open the way for clear understanding was invariably vitiated by some element of the European and by all elements of the Italian press.

Foreign Affairs.—The chronicle of complicated events in 1937, on which the foregoing generalizations are built, begins with the signing of an Anglo-Italian declaration in Rome, on Jan. 2, concerning assurances with regard to the Mediterranean. This exchange of assurances, popularly known as the ' Gentlemen's Agreement ', disclaimed any desire by either party to modify the status quo in the Mediterranean area. Italy and Great Britain undertook to respect each other's rights and interests in the Mediterranean, and recognized freedom of entry, transit, and exit. Each promised not to encourage activities liable to impair good relations. This all-important declaration, calculated to allay suspicions created during the Sanctions period, was accompanied by the publication of Notes guaranteeing the immunity of the Balearic Islands from any Italian designs—thus in turn banishing fears born of Italy's attitude to the Spanish war. On Jan. 7 an Italian Memorandum in reply to an Anglo-French Note on foreign intervention in Spain clearly defined the policy of Rome. Italy agreed to the withdrawal of Italian volunteers and to the prevention of the despatch of others if all the interested Powers did likewise, and if such an agreement were followed up by another to stop indirect intervention. Parallel Notes by Italy and Germany on Jan. 25 emphasized their common attitude; and on Feb. 20 severe penalties came into force in Italy against the further enrolment of volunteers. But Press and other polemics on the interpretation of what constituted *indirect* intervention kept Italy and Europe in a state of tension. British rearmament, which at first had received a good press in Italy, began to be criticized. Italian anger over the invitation to Haile Selassie to attend the coronation of King George VI; the atmosphere surrounding the visit of Signor Mussolini to Italian North Africa when (March 18 at Tripoli) he made a demonstrative speech in favour of Islam; Italian fears of the Popular Front elements in France passing to Communist extremes; Italian indignation at hostile foreign sneers about the set-back to a column of Italian volunteers at Guadalajara; the decision on April 10 to establish an Army Corps in Libya; discontent with the conduct of France, Britain, and the League on the non-intervention problem; and a bitter intensification of newspaper war—all these things had already virtually negatived the spirit if not the letter of the Mediterranean Agreement. In Italian eyes the incapacity and ill-will of Geneva seemed manifest. Contacts with Germany became more intimate. Rapprochement negotiations had been opened with Yugoslavia, and a new Treaty was signed on March 26. General Göring went to Rome on April 26 and Baron von Neurath on May 2. A news boycott was placed on the coronation of George VI. The King and Queen of Italy made a State visit to Budapest on May 19. Abyssinia was not dealt with by the League at the Council meeting of May 24. On June 2, Marshal von Blomberg was fêted in Italy. Following the Leipzig incident, Italo-German withdrawal from Naval Control in Spain was announced on June 23; and the Italian cabinet approved schemes for ' Defence of the State Activities ' and national self-sufficiency.

July and August saw some improvement in the situation, with a promising exchange of letters between Signor Mussolini and Mr. Neville Chamberlain (*c.* Aug. 2). Speaking at Palermo on Aug. 20, Signor Mussolini said, ' When I come to reflect on the last two years of our relations with Britain, I come to the conclusion that after all there has been a great misunderstanding '. He said: ' Our relations with France could certainly be better if, in some relatively authoritative circles, there were not so much idolatry of Geneva, and if some parties did not hope for the downfall of the Fascist régime '. He also reiterated three key points of his foreign policy: lack of confidence in the League; the solidarity of the Rome-Berlin Axis; and the intention ' not to tolerate Bolshevism or anything of the kind in the Mediterranean '. Italian jubilation over their share in the capture of Santander (Aug. 25), however, infuriated half the British cabinet, and helped to put off Anglo-Italian conversations.

After a long period of reserve, it was semi-officially stated that the total number of Italian volunteers in Spain did not exceed 40,000. On Aug. 27 the Press published the names of 12 Italian generals serving with General Franco's forces. Pictures of Italians at the scene of operations thereafter became an open feature of Fascist newspapers. Casualty lists were published from time to time—the latest in 1937 being that of Oct. 29, when the



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THE MUSSOLINI FORUM, ROME, SHOWING THE INSTITUTE OF PHYSICAL EDUCATION

figures totalled 763 killed and 2,675 wounded 'for the cause of the Fascist ideal in the anti-Bolshevist Spanish War'.

And at that very moment when Great Britain and France were inviting 10 other states to confer on 'submarine piracy' in the Mediterranean, Russia (Sept. 6) presented a note in Rome accusing Italy of sinking Soviet ships. That was the last straw for Italians. Italy refused to sit at the same piracy conference table as her accusers; and rejected the Nyon Plan, although accepting (Sept. 21) the Anglo-French proposal for a Paris meeting of naval experts to consider Italian 'parity rights' in naval patrol. Signor Mussolini at the same time went right ahead with his intensification of Italo-German co-operation in European affairs.

On Sept. 25 he made a State visit to Germany, where he received a spectacular welcome. In ceremonies and in talks with Herr Hitler (Sept. 25–29) he made the Rome-Berlin Axis more solid than ever; and on Nov. 6 he aligned Italy with Germany and Japan by formally subscribing to the Germano-Japanese Anti-Comintern Pact, thus providing for tri-partite consultation and action against those at home or abroad engaged 'directly or indirectly' in the service or promotion of Comintern activities. In the midst of renewed newspaper tirades against democracy and against British policy in Palestine and Egypt, the Italo-Yugoslav rapprochement was completed by Belgrade's recognition of Italian sovereignty in Abyssinia. In Italy this was considered to be the beginning of the end of the Little Entente, with all that that implied in post-war European relations. Italy's foreign policy crystallized. Manchukuo was recognized as an independent state on Nov. 16. Signor Mussolini, in the *Popolo d'Italia*, expressed sympathetic conviction that Japan would be victorious in China. The same paper the next day attacked the *New York Times* for the ideas 'fermenting in the fat bellies of the democracies'.

Although repeated efforts had been made throughout the year to renew Anglo-Italian diplomatic conversations on the whole Mediterranean and European situation, Signor Mussolini at this phase decided there was negligible hope. A communiqué announced that 'Italy was not to be chloroformed with soft words'. The time was now considered ripe for breaking completely away from Geneva. On Dec. 12, Signor Mussolini, in a speech broadcast throughout the country from the balcony of the Palazzo Venezia, announced that Italy had decided to leave the League of Nations. A telegram of resignation was despatched to the League Secretary that night. The days and conditions under which the Gentlemen's Agreement of Jan. 2 was signed seemed very distant and changed. The political year ended with the reported decision of England to begin a broadcast from Daventry in Arabic to counteract the Italian broadcast to Palestine from Bari, and with the Press on both sides talking of a 'radio war'.

Home Affairs.—The only Constitutional change carried out during the year was a measure (Jan. 9) which invested the cabinet with immediate powers to issue all necessary regulations in the event of a state of war or a state of neutrality in Italy. Such powers were previously vested in the king, but were transferred to Parliament during the World War. They have now been handed over to the cabinet, which means in this case the *Capo del Governo*, Signor Mussolini. On March 2 the Fascist Grand Council decided on the adoption of a five-point programme: (1) a further increase of Italy's armed strength; (2) a continuation for five years of the functions granted to the General Commissariat for the manufacture of war material; (3) complete militarization of Italian man-power from the ages of 18 to 55; (4) maximum self-sufficiency as far as war needs were concerned, and the sacrifice, even total if necessary, of civil needs to military exigencies; (5) the collaboration of science and of Italian technicians in the achievement of the above aims. Italian estimates on the available man-power within the age limits of 18 and 55 were 8,800,000 effectives—which seemed an enormous figure. Application of this programme affected the social life of the Italian people throughout the whole year. On April 13 a law was passed to ensure the teaching of 'military culture' in all schools. A first report on the new system (begun in 1936) of training the youth of Italy in military affairs before they are conscripted for the usual army service stated that 550,000 young men, divided into 7,000 instructional classes, had gone through a course of training, and that 95 per cent. of them had gained first-class military certificates. Other laws for the inculcation of military ideas in the young were passed. The most important of these was a decree, dated Oct. 27, which amalgamated all the various children's Fascist organizations for both boys and girls into one enormous institution under the direct control of the Secretary of the Fascist party. Boys and girls from the ages of six years onwards were thus gathered into a training bloc of over seven million souls. This comprehensive organization was named 'Italian Youth of the Lictor' (*Istituzione della Gioventù Italiana del Littorio*).

The total number of persons belonging to the Fascist party or affiliated to its various organizations on Oct. 29, 1937—the beginning of 'the Sixteenth Year of the Fascist Era'—was 11,408,153. Of these, 2,152,240 were actual members of the party, in that they held the 'Party Ticket'. During October there was a slight localized recrudescence of anti-Fascist efforts in north-central Italy and in Sardinia. A total of 42 men, convicted and imprisoned for Communist and Anti-Fascist activities, was published. Relations between Church and State remained friendly and undisturbed. On April 5 Queen Elena of Italy received from Pope Pius XI the signal gift of the Golden Rose. On Feb. 12 all Italy rejoiced in the birth at Naples of a son and heir (Victor Emmanuel, Prince of Naples) to Crown Prince Umberto and Princess Marie José; and on July 20 all Italy mourned the death of Senator the Marchese Guglielmo Marconi. Senator Marconi's place as President of the Italian Royal Academy was given (Sept. 22) to Gabriele d'Annunzio, who died on March 1, 1938.

The repercussions of the foreign and home programmes on Italy's national economy placed considerable strain on the reduced resources of the Exchange Institute, which is responsible for providing foreign exchange for all imports. At the same time, the country for the same reasons experienced a wave of inflation, high levels of employment and wages, extra profits, and increased spending power. The gold and foreign exchange resources of the Exchange Institute are not known, but the estimate carried over from 1936 was believed to be about £55 millions. In view of the policy of secrecy which still largely prevails concerning such data as the position of the Bank of Italy, the position of the Treasury, the Gold Reserve, the amounts advanced by the Bank of Italy to the Treasury, and the sums involved in what is called the Extraordinary Budget, it is impossible to give an accurate statement of the total position.

In the month of June the cabinet decided to reorganize the Industrial Reconstruction Institute (I.R.I.) and diverted its original functions, as a credit institution for the rationalization of industry as a whole, into a machine for developing national defences and rearmament, economic self-sufficiency, and Italian East Africa. By law it had to divest itself of all industrial holdings in concerns not directly connected with these three purposes. Towards this end the whole of Italy's iron and steel industries were amalgamated (June 24) in one combine known as 'IRI-FERRO' with a £9,734,000 4½ per cent. bond issue, just as the mercantile marine had been amalgamated in Dec. 1936 as 'IRI-MARE'. As a further aid to such measures, the amount of Treasury outstandings to the Bank of Italy was raised to over £10,815,000, with the net profits of the Bank to be transferred to the State in keeping with the law of June 11, 1936, under which the Bank became State property.

Finance and Banking.—The unit of currency is the lira, the average rate of exchange for sterling during 1937 being 95 lire to the pound; the par rate of exchange is 92·46 lire to the pound. Budget receipts for 1936–37, as published on Dec. 15, 1937, showed £267,164,179 (all sterling figures here given are at the par rate of exchange); and expenditures were: 'Ordinary' £253,223,015, and 'Extraordinary' £189,476,530. There was therefore a surplus of £13,941,164 over ordinary expenditure, but a total deficit of £175,535,366. The £13,941,164 'ordinary' surplus was carried over to the receipts of the Extraordinary Budget, the details of which were, and are, not disclosed. On Oct. 9 a 10 per cent. capital levy was imposed on all foreign and Italian limited companies, assessed on paid-up capital and reserves as at Oct. 5, 1936. About 43 millions is expected to be raised from this, which, if industrialists borrow from the Bank of Italy, should cover threatened Treasury deficits until Oct. 1938. The Banca d'Italia is the only bank of issue, and the notes in circulation (Feb. 1937) in Italy and East Africa amounted to 15,677 million lire. The proportion of gold reserve for circulation was 25·64 per cent. (I. S. MU.)

Trade and Communications.—Over 70,521,000 acres are under cultivation, of which about 25·5 per cent. was devoted to cereals, 3·5 per cent. to leguminous plants, 3·5 per cent. to vines, and about 3 per cent. to olives. Mining output of natural resources in 1935 (metric tons) was: iron pyrites and iron ore, 1,384,900; bauxite, 170,000; zinc, 144,000; mercury, 118,550. The year 1937 ended with a trade deficit of over £59,500,000, exclusive of trade with the Italian colonies. Imports were increased by about £21,600,000, and Germany is increasingly Italy's best customer. The 1937 wheat crop was a record one of 80,561,670 quintals (84 million quintals are estimated as required for self-sufficiency). Communications included (1935) 22,980km. of railways and (1936) 20,631km. of national roads; (1936) a mercantile marine of 1,246 vessels; and (1935) 20,802km. of air lines.

Defence Forces.—As has already been indicated, practically the whole male population of military age and under has been organized on a military basis. *See* also NAVIES OF THE WORLD; AIR FORCES OF THE WORLD.

IVES, FREDERICK EUGENE, American inventor; born in Litchfield, Conn., Feb. 17, 1856; died in Philadelphia, May 27, 1937. An account of his work may be found in the *Ency. Brit.*, vol. 12, p. 833.

IVORY COAST: *see* FRENCH WEST AFRICA AND THE SAHARA.

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JACOBI, HERMANN, D.Ph., German orientalist and Sanskrit scholar; born at Cologne, Feb. 11, 1850; died at Bonn, Oct. 20, 1937. He was professor of Sanskrit at Bonn University, 1889–1921. His works include a translation of the Jain Sutras (in vols. 22 and 45 of 'Sacred Books of the East,' 1922); and studies of the Ramayana (1893) and Mahabharata (1903). He also published notable contributions to the study of the Indian doctrine of poetics, Indian chronology and astronomics, the philosophy of the Sutras, and other important works, including contributions to Hastings's *Encyclopædia of Religion and Ethics.* In 1926, in commemoration of his 75th birthday in 1925, a body of 47 brother orientalists presented him with a volume dealing with aspects of Indian culture, including contributions from Sir George Grierson, Dr. F. W. Thomas, and Prof. R. L. Turner.

JAMAICA, a British colony in the West Indies; capital, Kingston (est. population in 1935, 115,000); governor, Sir Edward Denham. The area is 4,450sq.m. The population by the latest census (1921) was 858,118, and was officially estimated at 1,138,558 (1936). The language spoken is English. The colony is administered by a governor and legislative council, of whom a minority is elected. Jamaica has extensive shipping connexions and regular air service with outside points. It has 210m. of government-owned railways, and an extensive highway system. Imports and exports for 1936 were valued at £4,923,931 and £3,807,239 respectively, a slight decrease from 1935. Imports are principally foodstuffs and manufactured articles, 73·1 per cent. from the British Empire (Great Britain, 31·6 per cent.; Canada, 16 per cent.), and 16·4 per cent. from the United States. Bananas comprise half the exports; sugar, spices, rum, and coffee are also important. The exports went chiefly to Great Britain (55 per cent.), Canada (29·5 per cent.), and the United States (7 per cent.). Production is preponderantly agricultural. The banana industry, valued at £2,250,000 annually, leads, but is gradually losing pre-eminence, with sugar and rum production on the increase. The orange crop in 1936 doubled that of 1935 and quadrupled that of 1934, in consequence of the development of the New Zealand market. The monetary unit is the British pound sterling. Revenue for the year 1935–36 was £2,121,965; expenditure, £2,178,228. The public debt was £3,780,653 (1936). Jamaica had 653 government-aided elementary schools (1936) with 150,557 enrolment, maintained at a cost of £187,309, and 24 grant-aided secondary schools.

JAMMU AND KASHMIR. This Indian State is more commonly known as Kashmir than by its official name. It lies across the northern frontier of British India, impinging on Chinese Turkestan. Except where it runs down into the Punjab plains round Jammu, it is a country of mountains, forests, and lakes, climbing on to the 'roof of the world' at Gilgit and Ladakh, and embracing the chiefships of Hunza and Nagar. Its area is returned as 84,516sq.m., and its population as 3,646,243, of whom 77 per cent. are Moslems and only 20 per cent. Hindus. The capital, and also the only town of importance, is Srinagar (173,573), and the ruler is Maharaja Sir Hari Singh, with a salute of 21 guns.

The country has suffered recently from political unrest, due mainly to complaints by the Moslem subjects of the Maharaja that they are oppressed by his Hindu officials. The trouble has been met by reforms and concessions; but at Jammu disorder broke out in 1937, on the part of the Hindus, in protest against a judicial decision on the subject of cow-killing. (Me.)

JAPAN, an Empire in the western Pacific; capital, Tokyo; ruler, the Emperor Hirohito; premier, Prince Fumimaro Konoye. It consists of a chain of islands stretching from South Sakhalin (50° of latitude) to the South Seas Mandated Islands (which lie near the equator), and of the Korean peninsula, on the mainland of Asia, and the small Kwantung leased territory, with the city of Dairen, on the Liaotung peninsula. Japan proper consists of the four main islands of Honshu, Hokkaido, Shikoku, and Kyushu, while Korea, Formosa, and South Sakhalin are administered as colonies. This is also true of the South Seas islands, which were granted to Japan under a mandate from the League of Nations after the World War. The total area of the Japanese Empire is 263,359sq.m., of which Japan proper accounts for 178,756sq.m. Population of the Empire (census, Oct. 1, 1935) was 97,697,555, divided as follows: Japan proper, 69,254,148; Korea, 22,899,038; Formosa, 5,212,426; Kwantung Province and South Manchuria railway zone, 1,656,726; South Sakhalin, 331,943; South Seas Mandated Islands, 102,537. By the end of 1937, the population of the Empire was in excess of 100 millions, that of Japan proper being estimated at 71,252,800 on Oct. 1, 1937. Population of leading cities (census, 1935): Tokyo, 5,875,667; Osaka, 2,988,874; Nagoya, 1,082,816; Kyoto, 1,080,593; Kobe, 912,179; Yokohama, 704,290.

History.—Japan's modern era begins with the accession of the Emperor Meiji in 1868, when the policy of rigid seclusion from the outside world which had been practised since the early part of the 17th century was replaced by one of rapid adaptation of modern political and economic institutions and inventions. At the same time certain conservative influences, notably the belief in the divine character of the emperor and the old-fashioned family system, were retained. Landmarks in modern Japanese history are: the promulgation of the Constitution (1889); the war with China (1894–95); the Russo-Japanese War (1904–05); participation in the World War on the side of the Allies (1914–18); occupation of Manchuria (1931–32); the undeclared war with China (1937–). (For the Sino-Japanese War, *see* that heading.)

The Japanese Imperial Diet is bicameral, consisting of a House of Representatives, elected by universal suffrage, and a House of Peers. The latter is made up of all imperial princes, other princes and marquises, of elected representatives of the other orders of the aristocracy, counts, viscounts, and barons, of representatives of the wealthy business classes, and of statesmen and scholars appointed in recognition of public services. There were 408 members of the House of Peers in Jan. 1937. The results of the last election to the House of Representatives (held in April 1937) by party and number were as follows: Minseito, 179; Seiyukai, 175; Social Mass, 36; Showakai, 18; Kokumin Domei, 11; Tohokai, 11; Independents and small groups, 36; total, 466.

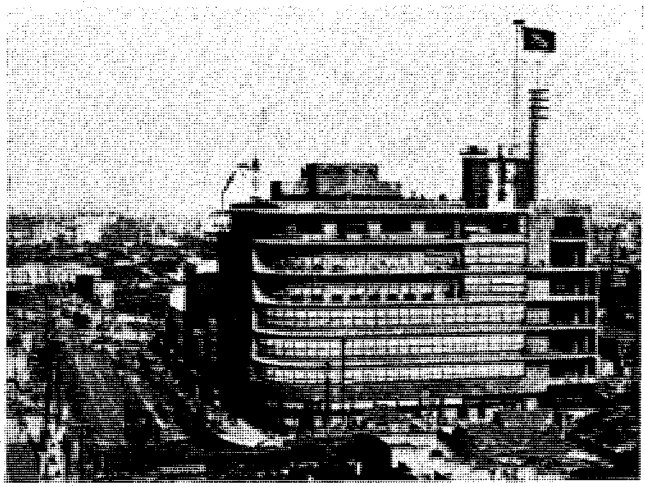
There was in 1937 little difference between the two traditional large parties of Japan, the Minseito and the Seiyukai, as regards political programme. The former was stronger in the towns, the latter in the country districts. During the period of 12 or 13 years after the World War when parliamentarism was at its height in Japan, the Minseito was considered somewhat more liberal in internal and international policy and more orthodox in finance than the Seiyukai; but the march of events has largely obliterated the former issues between these parties. The Social Mass Party, which polled its largest vote of about 900,000 in the last election, is committed to a platform of moderate socialism. The Tohokai is a right wing semi-Fascist grouping, while the Showakai and Kokumin Domei are small groups of secessionists from the Seiyukai and Minseito respectively. Since the political upheaval of May 15, 1932, there have been no party cabinets in Japan. All cabinets, including the present one headed by Prince Fumimaro Konoye, have been formed on a national basis, although only one cabinet, the short-lived one of General Senjuro Hayashi, failed to include representatives of the larger parties.

Trade and Communications.—Japan's exports in 1936 were 2,692,976 yen and imports were 2,763,681 yen. Exports in 1937 were 3,175,424 yen; imports were 3,783,177. Among Japan's more important exports are cotton goods, raw silk, rayon tissues, machinery, canned fish and other foodstuffs, woollen and knitted goods, ceramics, and rubber goods. Its more important imports include raw cotton, wool, petroleum, scrap iron, iron ore, lead, copper, tin, machinery, and equipment.

There were 14,612m. of government and private railways on Dec. 31, 1935, in Japan proper, besides 2,782m. in Korea, 935m. in Formosa, and 300m. in South Sakhalin. A total of 3,563 steamers of 3,964,175 gross tons were registered in Japan in 1936. The number of sailing ships was 15,531; the gross tonnage, 918,673. Japan had 23 commercial aeroplanes on Oct. 1, 1935. Air routes link up the main cities of Japan proper, and regular air service is maintained between Japan proper, Formosa, the South Seas islands, Korea, and Manchukuo. An air route between Japan and Tientsin has been installed recently. During the year 1935–36 Japan's aeronautical companies carried 11,877 passengers, 75,643kg. of goods and 265,564kg. of mail. There were 8,931 telegraph stations in Japan proper in 1936 and 11,471 post offices. There were 232,000m. of telegraph lines, handling about 65 million messages annually. In March 1936, there were 5,310 telephone exchange offices in Japan proper, with 870,476 subscribers.

Agriculture, Manufactures, and Mining.—There were 5,610,607 farm households in Japan at the end of 1935. This figure shows little change from year to year. Much the most important crop in Japan was rice, with the breeding of silkworms as a secondary source of income for farmers in some parts of the country. Other agricultural products were wheat, rye, barley, oats, potatoes, and sweet potatoes. At the end of 1935 there were in Japan 1,448,481 horses, 1,684,461 cattle, 1,063,000 pigs, 47,303 sheep, and 278,000 goats.

Japan's main natural resources are its fisheries, which provide an important item in the national diet, its fertile and well-cultivated rice-lands, its abundant supply of cheap hydro-electric power, and the timber which supplies raw material for its large and growing paper industry. In the main, however, Japan is scantily supplied with natural resources; and its industries have been built up on a basis of importing minerals and raw materials from abroad and working them up as manufactured goods for domestic use or for export.



Fox Photos]

A VIEW OF TOKYO, SHOWING A MODERN DEPARTMENT STORE

Industry gives employment to about 6 million people in Japan, of whom about half are employed in tiny workshops employing less than five persons. These small workshops, where wages are extremely low, are an important factor in Japan's economy. The most important single industry is the output of textiles. Japan leads the world in the production of rayon, and exports of cotton cloth reached the figure of 2,709,884,000sq.yds. in 1936. Japan's most striking gains in recent years have been in the heavy industries, such as metallurgy, machine-building, and chemicals. Japan ranks fourth as a producer of chemicals. The value of its output of machinery and tools was 1,458 million yen in 1935, as against 410,133,000 yen in 1931. Other important industries are the generation of electrical power, food products, paper, wood products, and ceramics. Apart from coal, Japan is not rich in minerals; but mining output has been increasing under the stress of industrial demand. In 1936, Japan produced 38,067,000 tons of coal, as against 34,904,000 tons in 1935; 78,114 tons of copper, as against 69,289 in 1935; 21,114kg. of gold, against 17,837kg. in 1935; 38,204,620 hectolitres of petroleum products, against 34,904,000 hectolitres in 1935.

Banking and Finance.—The unit of currency is the yen (equivalent to approximately 1*s.* 2*d.* at the end of 1937). The budget for 1937–38 (the Japanese fiscal year runs from April to April) was 2,813,937,971 yen, and was the largest in Japanese financial history. The preliminary budget estimate for 1938–39 is 2,868 million yen. Both these budgets leave out of reckoning the financing of the military operations in China. A sum of almost 2,600 million yen had been appropriated for this purpose during 1937 and was mainly to be raised by loans. Japan's national debt has been increasing steadily since 1931. At the end of 1936 it amounted to 8,522,439,750 yen, owed within the country, and 1,331,860,889, owed abroad, in America, Great Britain, and France. By the end of 1937 the total debt was in excess of 13,000 million yen, leaving out of account the added burden of the foreign debt because of the greater depreciation of the yen, in comparison with the dollar and the pound.

The Bank of Japan is the central bank, and has the privilege of issuing convertible bank notes. The Yokohama Specie Bank is in charge of foreign exchange transactions and finances foreign trade. Commercial banking is largely in the hands of seven large banks: the Mitsui, Mitsubishi, Dai-ichi, Sumitomo, Yasuda, Daihyaku, and Sanwa. Foreign banks operating in Japan include the Hong Kong and Shanghai Banking Corporation, the Chartered Bank of India, Australia and China, the National City Bank of New York, the Banque Franco-Japonaise, and the Nederlandsch-Indische Handelsbank.

Education and Religion.—There were 46,138 schools of all kinds in Japan in 1935, with 14,035,823 students. Elementary education is compulsory, and the percentage of attendance among children of school age is 99·58. Japan has 45 universities with 71,162 students. Freedom of religion is guaranteed by the Constitution. The latest official statistics (end of 1933) reveal 41,127,307 Buddhists, 16,525,840 Shintoists, and 439,444 Christians in the country.

Army and Navy.—The Japanese Army is raised on a basis of universal liability to service of all male Japanese between the ages of 17 and 40. Its peace time strength is officially stated at about 230,000, organized in 17 divisions; no official figures have been published of the war strength reached at the end of 1937.

The strength of the Navy, as on Sept. 30, 1936, was officially stated at 302 warships, of a total tonnage of 1,134,823, including nine battleships, 12 first-class and 25 second-class cruisers, six aircraft carriers, and three seaplane carriers. Japan gave two years' notice of denunciation of the Washington Naval Treaty at the end of 1934. After an abortive conference in London in Dec. 1936 and Jan. 1937, Japan resumed full freedom of naval construction. (*See* also SINO-JAPANESE WAR.)

BIBLIOGRAPHY.—Annual issues of *The Japan Year-Book*; T. Yano and K. Shirasaki, *Nippon: A Charted Survey of Japan*, 1936; *Japanese Trade and Industry: Present and Future*, by the Mitsubishi Economic Research Bureau; Ryoichi Ishii, *Population Pressure and Economic Life in Japan*. (W. H. CH.)

JAVA, fourth in size, but most important in population and resources among the islands of the Netherlands Indies, is separated from Sumatra to the west by Sunda strait, and from Bali to the east by Bali strait. With the adjacent small island of Madura, Java in 1930 had a population of 41,719,524, mostly of Malay race professing the Mohammedan religion. The area of Java and Madura is 50,752sq.m. Java is the most densely populated land in the world, with 821 inhabitants per square mile: hence the economic crisis of 1929–33, during which period the quantity of Netherlands Indian exports declined by 17 per cent. and the value by 67 per cent., brought a good deal of unemployment and distress. The number of labourers employed on large estates decreased from 1,200,000 to 600,000. The government has endeavoured to cope with this situation by organizing migration to the less thickly peopled neighbouring island of Sumatra and by encouraging the development of native industries. Another noteworthy result of the crisis was the marked increase in the purchase of cheaper Japanese goods. Japan's share in the import trade of the Netherlands Indies increased from 10 per cent. in 1928 to 30·9 per cent. in 1933. Further growth has been checked by the introduction of a quota system for Japanese goods. Approximately 40 per cent. of the land in Java is under cultivation, the remainder consisting mainly of mountains and forests. The island produces 99 per cent. of the world's quinine, and is rich in sugar, coffee, tea, cocoa, indigo, spices, tobacco, rubber, tin, and petroleum. (W. H. CH.)

JAZZ. The development of jazz during 1937 emphasized more than ever that this peculiarly modern and characteristically American form of art represents a treatment of musical materials rather than a definite kind of music. Jazz itself has been most accurately defined as 'the distortion of the conventions of music'. Orthodox music can be distorted, not only rhythmically, but also from the standpoint of melody, harmony, tone colour, and form, and all of these distortions enter significantly into up-to-date jazz. 'Swing', which is the current equivalent of 'hot jazz', may be considered the latest and the most complicated form of musical distortion. After eliminating the vast amount of nonsense written about 'swing', it becomes obvious that it consists of nothing more than improvised variations on a theme. These improvisations may be individual, with one member of a band, or collective, with the entire ensemble treating the basic melody independently and simultaneously. That the tune is often completely buried is considered no handicap.

Essentially such music is a revival of the raucous jazz that flourished before the World War, with the difference that the modern instrumentalists are technically far superior. Even the best performers, however, inevitably repeat the same tricks and patterns *ad infinitum*, and the general interest in their playing seems due chiefly to astonishment at spectacular technique. 'Swing' devotees take these performances very seriously. With this constant emphasis on treatment and interpretation, popular music has swung away from publication towards a concentration on arrangements, gramophone records, and radio performances. The skilled arranger is to-day more important than the composer himself, and much recent jazz consists merely of new arrangements of old tunes. Outstanding arrangers are Larry Clinton, responsible for *Satan Takes a Holiday*, and Will Hudson, who wrote the popular *Organ Grinder's Swing* (definitely a jazz ornament rather than a tune) and *Mr. Ghost Goes to Town*. Duke Ellington has added to his past successes with *Caravan*, and the authentic negro style is maintained by such interpreters as Cab Calloway, Louis Armstrong, 'Fats' Waller, and Art Tatum, with Reginald Forsythe developing rapidly as a sophisticated composer. But white men have gone even farther with 'swing', led by Benny Goodman, Bunny Berigan, Louis Prima, and the Dorsey brothers. Eddie Duchin and Alec Templeton have given new character to popular piano-playing, and the successful band leaders have included Shep Fields, Horace Heidt, Leo Reisman, Sammy Kayes, Richard Himber, Abe Lyman, Ray Noble, and such established names as Guy Lombardo, Fred Waring, Wayne King, Glen Gray, Rudy Vallee, Vincent Lopez, and Paul Whiteman. On the screen, the teams of Gordon and Revel, and Warren and Dublin, have held their own, with George Gershwin's posthumous work setting a high standard. Rodgers and Hart contributed some good scores to the stage, while Hoagy Carmichael and Stanley Adams came through with the individual success, *Little Old Lady*. Such stars as Irving Berlin and Jerome Kern remain undimmed in the heaven of popular music, with Arthur Schwartz, Vernon Duke, Johnny Green, Nat Skilkret, Billy Hill, and others still capable of turning out a good tune. It has been definitely proved, however, that jazz to-day demands adaptation rather than invention, and all signs point towards a continued development in the same direction.

JEWISH RACE, DISTRIBUTION OF. For the following reasons it is difficult to ascertain the exact number of the Jews (according to religion) at a given year on the basis of the official census figures:

1. In various countries, such as Iran, Yemen, Brazil, no census at all has so far been taken.

2. In some other countries, for instance, England, France, Belgium, United States of America, Argentina, the census does not indicate the religion of the inhabitants.

3. The last census available was not carried out in the same year in all countries, but in different years during the period 1921–36.

We, therefore, have either to rely entirely on estimates (as in cases 1 and 2), or to complete the last census figures by estimates mainly based on data regarding natural increase and migration since the last census, in order to find out the number of Jews in every country at the end of the year 1937. These numbers are given in the following table in column 7. The figures given in the columns beneath 'number' are generally based on the last official census; estimates are marked by an asterisk.

As sources for estimates, the following have been used:

(1) For the total population—the *Statistical Year-Book of the League of Nations* 1936/37, Geneva, 1937; *The Statesman's Year-Book*, 1937 (London, 1937).

(2) For the Jewish population—*The American Jewish Year-Book*, 5698 (1937/38) (Philadelphia, 1937); *The English Jewish Year-Book*, 5698 (1937/38) (London, 1937); other sources, as indicated in each case in the annotations (investigations and inquiries of the author marked with **).

The World Distribution of the Jews according to the Last Census or Estimate

No.	State	Total Population		Jewish Population			Estimated Number of Jews at the End of the Year 1937
		Year	Number	Year	Number	Per cent. of Popul.	
	I. EUROPE						
1	POLAND	1931	32,183,500	1931	3,113,000	9·7	3,275,000 [1]
2	RUSSIA IN EUROPE:						
	(*a*) Ukraine	1926	29,018,187	1926	1,574,428	5·4	1,700,000
	(*b*) White Russia	1926	4,983,240	1926	407,059	8·2	400,000
	(*c*) Central Russia	1926	82,045,623	1926	588,843	0·7	900,000
	Total		116,047,050	1926	2,570,330 [2]	2·2	3,000,000 [2]
3	RUMANIA	1930	18,052,896	1930	758,226	4·2	800,000
4	HUNGARY	1930	8,688,319	1930	444,567	5·1	440,000
5	GERMANY (including Saar-district)	1933	65,988,491 [3]	1933	503,720 [3]	0·8	365,000
6	CZECHOSLOVAKIA:						
	(*a*) Bohemia	1930	7,109,376	1930	76,031	1·1	80,000
	(*b*) Moravia and Silesia	1930	3,565,010	1930	41,250	1·2	40,000
	(*c*) Slovakia	1930	3,329,793	1930	136,737	4·1	135,000
	(*d*) Carpathorussia	1930	725,357	1930	102,542	14·1	105,000
	Total	1930	14,729,536	1930	356,830	2·4	360,000
7	GREAT BRITAIN AND N. IRELAND	1931	46,189,445	1931	300,000 *	0·6	340,000
8	FRANCE	1936	41,905,968	1935	260,000 *	0·6	270,000 [4]
9	AUSTRIA	1934	6,760,233	1934	191,481	2·8	180,000
10	LITHUANIA (without Memel district)	1923	2,028,971	1923	155,126	7·6	160,000
11	NETHERLANDS	1930	7,935,565	1930	111,917	1·4	115,000
12	LATVIA	1935	1,950,502	1935	93,406	4·8	93,000
13	GREECE	1928	6,204,684	1928	72,791	1·2	75,000
14	YUGOSLAVIA	1931	13,934,038	1931	68,405	0·5	75,000
15	BELGIUM	1930	8,092,004	1931	60,000 *	0·7	70,000
16	EUROPEAN TURKEY	1935	1,266,132	1927	51,726	0·5	50,000
17	ITALY	1936	42,527,561	1931	47,825	0·1	50,000
18	BULGARIA	1934	6,090,215	1926	46,431	0·8	50,000
19	SWITZERLAND	1930	4,066,400	1930	17,973	0·4	20,000
20	SWEDEN	1930	6,141,571	1930	6,653	0·1	10,000 [5]
21	DANZIG	1929	407,517	1927	9,239	2·4	7,000
22	DENMARK	1935	3,706,349	1921	5,690	0·2	7,000
23	ESTONIA	1934	1,126,413	1934	4,566	0·4	5,000
24	IRELAND	1936	2,965,854	1926	3,686	0·1	5,000
25	SPAIN	1930	23,563,867	1930	4,000 *	0·0	5,000
26	RHODES	1934	56,754	1930	3,886	7·1	4,000
27	PORTUGAL	1930	6,825,883	1931	1,200 *	0·0	3,000
28	MEMEL DISTRICT	1936	150,893	1936	3,000 *	2·0	3,000
29	LUXEMBURG	1930	299,993	1930	2,242	0·7	3,000
30	FINLAND	1930	3,667,067	1930	1,782	0·1	2,000
31	NORWAY	1930	2,814,194	1930	1,359	0·1	2,000
32	GIBRALTAR	1931	21,372	1931	1,000 *	4·7	1,000
					Total in Europe	. .	9,845,000

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[1] Since the census of 1931 the Jews in Poland had a natural increase of about 270,000, and lost by emigration about 100,000.

[2] Does not indicate the religion of the inhabitants, but only their national, *i.e.* ethnic, attachment as declared by every person himself. While, therefore, in all other countries a person was considered a Jew if he was of Jewish *religion*, in Soviet Russia the adherence to the Jewish *nationality* was the decisive factor for his being counted as a Jew. In this way a large number of persons in Russia, although affiliated, either themselves or through their parents, with the Jewish religion, were, nevertheless, registered in the census as belonging to the Russian or Ukrainian nationality.

[3] Also includes the inhabitants of the Saar-district re-incorporated into Germany in 1935. Since the census of 1933 till the end of 1937, about 110,000 Jews left Germany; besides, there was a natural decrease of about 25,000.

[4] A. Menes (*Jüdische Rundschau*, Berlin, June 4, 1937).

[5] Dr. M. Ehrenpreis, Grand Rabbi, in Stockholm.

The World Distribution of the Jews according to the Last Census or Estimate

No.	State	Total Population		Jewish Population			Estimated Number of Jews at the End of the Year 1937
		Year	Number	Year	Number	Per cent. of Popul.	
	II. America						
1	United States	1930	122,775,046	1927	4,228,000 * [6]	3·5	4,650,000
2	Argentina	1935	12,402,068 *	1934	253,000 [7]	2·0	270,000
3	Canada	1931	10,376,786	1931	155,614	1·5	170,000
4	Brazil	1930	40,273,000	1935	50,000 **	0·1	55,000
5	Uruguay	1931	1,903,083	1935	20,000 **	0·5	25,000
6	Mexico	1930	16,522,722	1935	20,000 *	0·1	20,000
7	Cuba	1931	3,962,344	1933	7,800 *	0·2	10,000
8	Chile	1930	4,287,445	1935	9,000 **	0·9	10,000
9	Colombia	1928	7,851,000	1935	3,000 **	0·04	4,000
10	Peru	1936	6,500,000 *	1935	2,500 *	0·04	3,000
11	British Guiana . . .	1931	310,933	1925	1,786 *	0·6	2,000
12	Jamaica	1935	1,121,823 *	1935	2,000 *	0·2	2,000
13	Dutch Guiana (Surinam) . .	1935	231,489	1934	800 *	0·4	1,000
14	Curacao	1935	79,395	1933	566	0·7	1,000
15	Paraguay	1935	926,580 *	1935	1,000 **	0·01	1,000
16	Venezuela	1926	3,026,878	1926	882	0·03	1,000
17	Other Parts of America . .	—	—	—	—	—	1,000
					Total in America	. .	5,226,000
	III. Asia						
1	Palestine	1931	1,035,154	1931	175,006	16·9	420,000 [8]
2	Asiatic Russia	1926	30,980,865	1926	109,851	0·4	130,000
3	Iraq	1934	3,561,000	1934	100,000 **	2·8	100,000
4	Iran	1935	15,000,000 *	1935	50,000 [9]	0·3	50,000
5	Syria and Lebanon . .	1935	3,630,000	1932	16,588 [10]	0·5	15,000
6	Yemen	1935	1,000,000 *	1935	50,000 [11]	5·0	50,000
7	Asiatic Turkey	1935	14,935,000	1927	30,146	0·2	25,000
8	India	1931	352,837,778	1931	24,141 [12]	0·0	25,000
9	China	1936	422,707,868 *	1935	9,000 *	0·0	9,000
10	Manchukuo	1934	30,504,689 *	1934	8,000 *	0·0	8,000
11	Afghanistan	1935	7,000,000 *	1935	5,000 *	0·1	5,000
12	Aden	1931	48,338	1931	4,000 *	8·8	5,000
13	Japan	1935	99,354,281	1930	2,000 *	0·0	2,000
14	Philippines	1935	13,264,000	1934	500 *	0·0	1,000
15	Straits Settlements . . .	1931	1,114,012	1931	1,000 *	0·1	1,000
16	Netherlands Indies. . .	1930	60,727,233	1930	1,095	0·0	1,000
17	French Indo-China . . .	1936	23,030,000 *	1936	1,000 *	0·0	1,000
					Total in Asia	. .	848,000
	IV. Africa						
1	French Morocco	1936	6,242,706	1936	161,312 [13]	2·5	175,000
2	Spanish Morocco and Tangier .	1934	855,202 *	1934	19,918 [13]	2·3	25,000
3	Algiers	1936	7,234,684	1931	110,127 [13]	1·5	130,000
4	British South Africa . .	1936	9,588,665	1926	71,816	0·9	95,000 [14]
5	Tunis	1936	2,608,313	1931	56,248 [13]	2·3	70,000
6	Egypt	1937	15,904,525	1927	63,550	0·4	70,000
7a	Tripoli } Libya . . .	1936	772,999	1931	21,342	3·5	22,000
7b	Cyrenaica }	1936		1935	3,192		3,000
8	Abyssinia (Ethiopia) . .	1935	5,500,000 *	1935	10,000 *	0·2	10,000 [15]
9	Southern Rhodesia . .	1935	1,289,000 *	1935	2,500 [16]	0·2	3,000
10	Other Parts of Africa . .	—	—	—	—	—	1,000 [17]
					Total in Africa	. .	604,000
	V. Australia						
1	Australia	1933	6,629,839	1933	23,553	0·4	25,000
2	New Zealand	1936	1,573,810	1926	2,591	0·2	3,000
					Total in Australia	. .	28,000
			Total in the whole World .			. .	16,651,000

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[6] H. S. Lindfield (*The Jews in the United States*, New York, 1927). Since 1927 there has been a Jewish immigration of about 70,000 and a natural increase of about 350,000.

[7] Dr. Simon Weil, Director of the Jewish Colonization Association, in Buenos Aires.

[8] The Palestine Government estimates the number of Jews on Sept. 30, 1937, at 389,504; to this figure are to be added *c.* 2,000 immigrants and 1,500 natural increase during Oct. to end of Dec. 1937, and 20,000 to 30,000 not officially registered Jewish immigrants who arrived during 1931-37.

[9] The mean between the estimates of *The Statesman's Year-Book* (40,000) and of Dr. A. J. Braver, *Jerusalem* (60,000).

[10] The 1932 census in Lebanon gave 3,588; in Syria the number was estimated, at the same time, at 13,000. Since 1932, the latter figure has decreased by emigration.

[11] Based on inquiries from Yemenite Jews in Jerusalem and Aden.

[12] Including about 10,000 Ben-Israel in Bombay and surroundings, and about 1,500 black Jews in Cochin.

[13] Comprises only native Jews. European Jews number: French Morocco 12,000, Spanish Morocco and Tangier 5,000, Algiers 10,000, and Tunis 10,000.

[14] South African Jewish Board of Deputies.

[15] Falashas (black Jews).

[16] Dr. M. Wischnitzer, Berlin.

[17] About 500 in North Rhodesia, 250 in Kenya.

(A.Ru.)

JINVARA, H.R.H. PRINCE, Prince-Patriarch of the Kingdom of Siam; born Dec. 16, 1859; died Aug. 25, 1937. He was the uncle of ex-King Prajadhipok, and was originally known by the name Mom Chao Bhuchong Chombhunud. The Prince was famed throughout Siam, and even beyond the boundaries of that country, for his learning and pious devotion to the Buddhist religion.

JOHANNESBURG, the largest town, chief commercial city, and headquarters of the railway system of the Union of South Africa, is the centre of the Witwatersrand mining industry. Population 500,697, of whom 252,663 are non-Europeans. For the town's history up to 1928, *see Ency. Brit.*, vol. 13, p. 82.

The Empire Exhibition, opened in Sept. 1936, closed on Jan. 15, 1937, having been visited by nearly two million people. A deficit of approximately £395,000 was incurred. The extraordinarily rapid development of the city proceeded unchecked; in April, plans were prepared for a new Power Station, to cost £1,500,000; in July, the City Council approved an expenditure of £1 million on development and storm-water drainage schemes; on June 26, Gen. Smuts opened Escom House, the headquarters of the S. African Electricity Commission, Africa's tallest building, 236ft. in height. During the year ending June 1937, 11,522 building plans affecting the city, representing an aggregate value of nearly £11½ millions, were passed. The decentralization of the city—in area the third largest in the British Empire—by building municipal halls in various parts of it, is under consideration. In August, plans were completed for extensions to the City Hall, including a new dome and carillon, and the raising of the building by two stories; work was begun in December. In September, the second of three new underground reservoirs, each to hold 5 million gallons of water, was opened. The *Johannesburg Star* celebrated its Golden Jubilee on Oct. 25; and in the same month it was decided to establish a Cancer Institute as the city's memorial to King George V.

JOHNSON, MARTIN ELMER, American explorer; born in Rockford, Ill., Oct. 9, 1884; died at Los Angeles, Calif., Jan. 13, 1937, as a result of injuries sustained in an aeroplane crash. Martin Johnson started his adventurous career in 1905, when he accompanied Jack London and his wife on the voyage of the *Snark* to the South Seas. His expeditions with his wife, the former Osa Leighty, carried him since their marriage in 1910 to the South Sea islands, Australia, Borneo, Malaya, Ceylon, India, and Africa. In Africa the Johnsons carried on the work started by Carl Akeley, making a motion-picture record of the vanishing wild life of that continent for the American Museum of Natural History during 1924–29. The last and most famous of their films was *Congorilla*, a study of life among the pygmies of the Belgian Congo. These adventures were further described in such books as *Cannibal Land* (1917), *Camera Trails through Africa* (1924), *Safari* (1928), and *Lion* (1929).

JUDICIARY, BRITISH. In England and Wales the judicature consists of two main branches, His Majesty's High Court of Justice and His Majesty's Court of Appeal, the former having both original and appellate jurisdiction and the latter mainly appellate.

The first has three divisions: (*a*) the Chancery Division, consisting of the Lord Chancellor and six justices; (*b*) the King's Bench Division, headed by the Lord Chief Justice of England and containing 17 justices; and (*c*) the Probate, Divorce, and Admiralty Division, which until Dec. 1937 consisted of a President and two justices, and at that date had a further two justices assigned to it in consequence of the increase of work expected through the passing of the Matrimonial Causes Act (*see* DIVORCE).

The following is a list of members of these Divisions as at the end of 1937, with the dates of their appointment and their ages on Jan. 1, 1938:

THE CHANCERY DIVISION

	Apptd.	Age
The Lord High Chancellor (President):		
The Rt. Hon. Viscount Hailsham .	1935	65
*Sir Albert Charles Clauson, C.B.E. .	1926	67
Sir Arthur F. C. C. Luxmoore . .	1929	61
Sir Christopher J. W. Farwell . .	1929	58
Sir Charles Alan Bennett . . .	1929	60
Sir Charles Stafford Crossman . .	1934	67
Sir Gavin Turnbull Simonds . .	1937	56

THE KING'S BENCH DIVISION

	Apptd.	Age
The Lord Chief Justice of England:		
The Rt. Hon. Lord Hewart . .	1922	67
Sir George A. H. Branson . .	1921	66
Viscount Finlay, K.B.E. . . .	1924	62
Sir John Anthony Hawke . .	1928	68
Sir Ernest Bruce Charles, C.B.E. .	1928	66
Sir Travers Humphreys . . .	1928	70
Sir Malcolm Macnaghten, K.B.E. .	1928	68
Sir Herbert du Parcq . . .	1932	57
Sir Rayner Goddard	1932	60
Sir Geoffrey Lawrence, D.S.O. . .	1932	57
Sir Cyril Atkinson	1933	63
Sir John Edw. Singleton . . .	1934	52
Sir Samuel Lowry Porter . . .	1934	60
Sir Walter Greaves-Lord . . .	1935	59
Sir George Malcolm Hilbery . .	1935	54
Sir Wilfrid H. P. Lewis, O.B.E. . .	1935	56
Sir Frederick John Wrottesley . .	1937	57
Sir Frederick James Tucker . .	1937	49

THE PROBATE, DIVORCE, AND ADMIRALTY DIVISION

President:		
The Rt. Hon. Sir Frank Boyd Merriman, O.B.E. . . .	1933	57
Sir George Philip Langton . . .	1930	56
Sir Alfred Townsend Bucknill, O.B.E. .	1935	57
Sir Stephen O. Henn-Collins, C.B.E. .	1937	62
Sir Francis L. C. Hodson . . .	1937	42

The Court of Appeal consists of four *ex-officio* judges, *viz.* the Lord Chancellor, the Lord Chief Justice, the Master of the Rolls (Rt. Hon. Sir Wilfrid Arthur Greene, apptd. 1937, aged 54), and the President of the Probate, Divorce, and Admiralty Division (*above*), and five Lord Justices of Appeal, all Privy Councillors who, at the end of 1937, were:

	Apptd.	Age
Sir Frederick Arthur Greer . . .	1927	74
Sir Henry Herman Slesser . . .	1929	54
*Sir Mark Lemon Romer . . .	1929	71
Sir Leslie Frederic Scott . . .	1935	68
Sir Frank D. MacKinnon . . .	1937	67

The Court of Criminal Appeal consists of the Lord Chief Justice and all the judges of the King's Bench Division.

The ultimate Court of Appeal from all courts in Great Britain and Northern Ireland is the House of Lords, which, when acting in this capacity, is presided over by the Lord Chancellor, all such Peers of Parliament who are holding, or have held, high judicial appointments, and the specially appointed Lords of Appeal in Ordinary, who, at the end of 1937, were:

	Apptd.	Age
Rt. Hon. Lord Atkin	1928	70
Rt. Hon. Lord Thankerton	1929	64
Rt. Hon. Lord Russell of Killowen	1929	70
Rt. Hon. Lord Macmillan, G.C.V.O.	1930	64
Rt. Hon. Lord Wright	1932	68
Rt. Hon. Lord Maugham	1935	71
*Rt. Hon. Lord Roche	1935	67

* In consequence of the retirement on Jan. 4, 1938, of Lord Roche as Lord of Appeal in Ordinary, the following judiciary promotions were made: Sir Mark Romer, as Lord Romer, became a Lord of Appeal in Ordinary; Sir Albert Clauson, Justice of the Chancery Division, became a Lord Justice of Appeal; and Mr. Fergus Dunlop Morton, K.C. (aged 50), was appointed a justice of the Chancery Division, and knighted.

For the hearing of appeals from the Indian, Dominion, Consular, and Ecclesiastical Courts, and from the Courts of Vice-Admiralty, the Judicial Committee of the Privy Council was constituted by statutes in 1833 (with subsequent amendments); it is the supreme judicial authority of the British Empire, sits in London at irregular intervals, and consists of the Lord Chancellor, the Lord President and ex-Lords President, the Lords of Appeal in Ordinary (*see* above), such other members of the Privy Council as hold or have held high judicial office within the meaning of the Appellate Jurisdiction Acts of 1876 and 1887, and (since 1928) a small number of judges from India and the Dominions.

Minor Courts.—Courts of first instance in civil cases—known as county courts—are held in various parts of the metropolis and in the more important provincial towns. There were, at the end of 1937, 57 county court judges, each of whom generally holds courts at several neighbouring centres. Appeals from their decisions are made to a divisional court, consisting of two or more High Court judges, and thence to the Court of Appeal (*see* above). In the City of London, a special civil court is held, of which the Lord Mayor and aldermen *pro tem.*, the Recorder of London, and the Common Sergeant are *ex officio* judges, and to which two professional judges are also appointed.

Criminal proceedings are initiated, and in the case of minor offences disposed of, in London at one of the 14 police courts, each served by two stipendiary magistrates, excepting North London and West Ham, which have each only one, and Bow Street, the principal metropolitan court, which has four, including the 'chief metropolitan magistrate'. In the City, the place of a police court is filled by the City of London justice rooms, held at the Mansion House and Guildhall by the Lord Mayor or one of the aldermen. In 1937, a Home Office committee recommended that the metropolitan police courts be reduced to 10, and that at each such court two stipendiary magistrates should sit simultaneously with lay judges. An increase of salary for London stipendiary magistrates and for county court judges from £1,650 to £2,000 per annum was approved by Parliament in 1937.

In the provinces, justices of the peace, who are laymen appointed by the Crown (through the Lord Chancellor), hold petty sessional courts of summary jurisdiction to dispose of minor offences; but to certain larger boroughs stipendiary magistrates, as in London, are appointed. In all large and many smaller boroughs—123 in all—courts of quarter sessions, presided over by a 'recorder', are held periodically to hear cases remanded from petty sessional courts, and cases requiring a jury. In counties, courts of quarter sessions are presided over by a 'standing chairman'.

Criminal offences committed in London and certain parts of the home counties, and not disposed of summarily, are tried at the Central Criminal Court (the 'Old Bailey'), of which the Lord Chancellor, the Judges of the High Court, the Lord Mayor, aldermen, Recorder, and Common Sergeant of the City of London are *ex officio* judges. In the provinces provision is made for the hearing of civil and criminal actions by assize courts, held three times (in Lancs and Yorks four times) yearly, generally in county towns, for which purpose England and Wales are divided into eight 'circuits', to each of which one or more of the High Court judges are appointed.

Special juvenile courts (*see* JUVENILE CRIME) are held as required by stipendiary magistrates or justices of the peace to try offences committed by children or young persons.

Inquiries into cases of violent or unnatural deaths are conducted by coroners, appointed for each county or part of a county. These must be barristers, solicitors, or medical practitioners.

The various ecclesiastical courts—the Consistory Court in each diocese, and the Court of Arches—are presided over by an ecclesiastical judge (Sir Philip W. Baker-Wilbraham), and an appeal lies from their decisions to the Judicial Committee of the Privy Council (*see* above).

Scotland.—In Scotland civil law is administered by the Court of Session, which consists of an 'Inner' and an 'Outer' House, the two constituting the court of law and equity, and the High Court of Justiciary, the supreme criminal court in Scotland.

The Inner House has two divisions, the first of which is presided over by the Lord President (Rt. Hon. Lord Normand), and the second by the Lord Justice Clerk (Rt. Hon. Lord Aitchison): each has three judges, besides its President. The Outer House has five judges. The Lord President, as Lord Justice General, presides also over the High Court of Justiciary, in which sit the Lord Justice Clerk, certain Lords Commissioners of Justiciary, and all the other judges.

Both civil and criminal cases are heard locally in the first instance in the Sheriff's Courts by the Sheriff-Substitute, from whose decision an appeal lies to the Sheriff. Sheriff-substitutes to the number of 60 are appointed for counties or parts of counties, and each sheriff, of whom there are 14 in all, has jurisdiction in a county or group of counties. In Scotland there are no coroners, their duties being carried through by the Procurator-Fiscal (a Crown official acting as public prosecutor in criminal cases) for the county at a private inquiry, the result of which is reported to the Lord Advocate, who may, at his discretion, order a public inquiry before the sheriff and a jury. (L. H. D.)

JUGOSLAVIA: *see* YUGOSLAVIA.

JULIANA, H.R.H. Princess of the Netherlands and Lippe-Biesterfeld (1909–), was born at The Hague, April 30, 1909, only child of Queen Wilhelmina and her Consort, Henry, Duke of Mecklenburg (*d.* 1934). Brought up upon democratic lines, she was educated at the University of Leyden, and was from an early age popular throughout the country. A cousin of Princess Alice, Countess of Athlone, she frequently visited England, and was a bridesmaid to the Duchess of Kent in 1934.

In Sept. 1936 she was betrothed to Prince Bernhard Leopold of Lippe-Biesterfeld (born at Jena, June 29, 1911), son of Prince Bernhard Casimir (*d.* 1934) and nephew of Leopold IV, the last reigning Prince. Educated at the Arndt Classical School, Berlin-Dahlem, and at Berlin, Lausanne, and Munich Universities, he was a student of law and political science, and a keen sportsman. After travelling he joined the German chemical firm, I.G.

Farbenindustries Aktiengesellschaft (Jan. 1, 1936), representing them in Paris and later at Amsterdam, which he had first visited in 1931. The wedding took place at The Hague amid scenes of great rejoicing on Jan. 7, 1937, after a violent anti-Dutch campaign in the German Press during which the Prince, who was now created Prince of the Netherlands, acted with the greatest circumspection. He met with a motoring accident on Nov. 29, and was confined to hospital for some weeks, suffering from concussion and minor injuries.

On Jan. 31, 1938, Princess Juliana gave birth to a daughter, Princess Beatrix Wilhelmina Armgard, to the great delight of the whole country.

JUTE is practically a monopoly of India, the cultivation being concentrated in Bengal (90 per cent.) and Assam and Bihar (10 per cent.). Since 1935 attempts have been made to raise the price of raw jute to remunerative levels by a voluntary restriction of acreage. Fibre production for 1936 was 1,560 thousand tons. Prices for jute in Calcutta touched the lowest point of 1937 in December, after a year during which the government had successfully maintained improved price levels. Production of Indian jute mills in the first eleven months of 1937 was 1,762,488,993yd. of hessian cloth, an increase of 109,365,905yd. over the corresponding period in 1936. The output of sacking by Indian mills for eleven months in 1937 was 1,326,570,742 yd., a gain of 104,409yd. over 1936.

In London the average price level of jute for 1937 was £20 10*s.* a ton for 'Firsts', compared with £18 7*s.* 6*d.* in 1936 and £18 10*s.* in 1935. An active market developed early in 1937, and on March 1 restrictions were removed on the number of working hours and the number of looms operated. In May the prices per ton for Firsts had advanced to £23 10*s.*, but there was a sharp reaction and prices dropped to £19 5*s.*, regaining a part of the loss and going to £21 17*s.* 6*d.* in July. Although succeeding fluctuations were small, the market touched £18 5*s.* in December. Negotiations were under way for a reduction of mill hours, a condition it was predicted would be necessary for improved prices.

JUVENILE CRIME. Although the number of juveniles charged with indictable offences has increased tremendously in recent years (from 11,247 in 1928 to 22,393 in 1935), it is pointed out, in the volume of criminal statistics issued by the Home Office in July 1937, that it is unsafe to assume that there has been a real increase in juvenile delinquency corresponding to the increase in the number of young persons charged and found guilty in the courts.

According to the latest criminal statistics, published in July 1937, boys and girls under the age of 17 formed 37 per cent. of the total number of persons charged with indictable offences. Eighty-three per cent. were dealt with under the Probation of Offenders Act. Of these, 51 per cent. were bound over with the supervision of a probation officer, 8 per cent. were bound over without supervision, and 24 per cent. were dismissed after charge proved. The number sent to Home Office schools was 2,340, or 9 per cent.

The districts in which the proportion of juvenile offenders placed under the supervision of a probation officer was substantially smaller than the average of 51 per cent. were few, the only notable exception being Carmarthen, which so dealt with only 16 out of 106 juvenile offenders. Of the large cities, those in which the proportion was comparatively low were Liverpool (28·6 per cent.) and Bristol (22·5 per cent.). On the other hand, in Birmingham the proportion was as high as 70·6 per cent. Some of the towns in which the proportion was below the average are among the few which use birching as a method of dealing with juvenile cases.

Corporal punishment for juvenile offenders is now used by only a small number of the juvenile courts, mostly in the counties and smaller towns. The number of orders for birching of boys under 14 years of age fell from 3,385 in 1900 to a low level of 135 in 1930, since when the numbers have risen slightly—the figure for 1935 being 218. Cases of boys between 14 and 16 being birched are comparatively rare, there being only 20 such sentences between 1918 and 1935.

Of the different types of indictable offences, larceny heads the list among juveniles, as with adults, cases of this kind being nearly four-fifths of the total. 'Breaking and entering' comes next in frequency, with frauds and false pretences, sexual offences, other indictable offences, and violence against the person all taking a very small share of the total.

Dealing with each specific offence, the number of juvenile offenders was 37 per cent. of the total number of larceny cases for all persons. The increase in this category has accelerated rapidly in recent years. Of all the cases of 'breaking and entering', juvenile offenders accounted for no less than 64 per cent.—38 per cent. being under the age of 14. The number of juvenile offenders in this class has more than trebled since 1929. The juvenile figures for frauds and false pretences, while only approximately 8 per cent. of the total, have nevertheless more than doubled since 1929. Juvenile sexual offenders form 20 per cent. of the total number of cases recorded, the increase in recent years being the greatest in any age-group. Finally, juvenile cases of violence against the person, while showing a heavy percentage increase since 1929, nevertheless still form only a very small proportion of the total number of these cases.

During the year, the Home Secretary announced that, in co-operation with the Board of Education, he had agreed to a plan of scientific investigation in connexion with juvenile crime, particularly with the aim of preventing careers of crime which start with trivial offences.

Wormwood Scrubs Prison is now also used as a 'clearing-house' for boys and youths found guilty of indictable offences. They are placed under observation for a certain period in order to diagnose the particular Borstal imprisonment centre most suited to them. In this work, the recently introduced 'surgical wing' is used, and offenders are classified into six different psychological groups.

The new Prison Reform Bill (presented to Parliament in Feb. 1938) proposes a modification of the Borstal system of imprisonment for young offenders by unifying sentences to a uniform three years—instead of the two- and three-year sentences now imposed. The power of release after six months, if the offenders show that they have benefited from treatment, will not be affected. (V. B.)

K

KAMERUN: *see* CAMEROONS.

KANSAS: *see* UNITED STATES OF AMERICA, THE.

KASHMIR: *see* JAMMU AND KASHMIR.

KAZAKH S.S.R., in area the second largest republic of the U.S.S.R. (*q.v.*), stretches between the Lower Volga and the Caspian Sea in the west, China in the east, the R.S.F.S.R. in the north, and the Central Asiatic Soviet republics, Turkmenistan, Uzbekistan, and Kirghizstan in the south. The capital is Alma-Ata; the national flag has a red ground, with a gold sickle and hammer and the name of the republic in Kazakh and Russian in the top left corner. Leading cities, with 1935 populations, are: Alma-Ata (formerly Verny), 197,400; Semipalatinsk, 136,400; and Karaganda, 118,900.

Area and Population.—Area: 2,744,000sq.km. Population (1933), 6,797,000 (rural 5,626,000, urban 1,171,000), of whom Kazakhs form 57·1 per cent., Russians 19·7 per cent., and Ukrainians 13·2 per cent. The main languages spoken are Kazakh, Russian, and Uzbek. In 1936–37, the total number of pupils was 930,000 in 7,903 schools; and there were 21 higher educational institutions, and 85 technical colleges.

History.—The adoption of a new Constitution by the 10th Extraordinary Soviet Congress in Alma-Ata on March 26, 1937, made Kazakhstan, formerly an autonomous republic belonging to the R.S.F.S.R., an equal, independent Union Republic of the U.S.S.R. The Kazakhstan S.S.R. is divided administratively into eight provinces. 96·9 per cent. of the population took part in the elections to the Supreme Council of the U.S.S.R. on Dec. 12, 1937.

Trade and Communications.—Sown area (1936), 21,053sq.m. In 1937, 97·5 per cent. peasant households were collectivized. The chief agrarian products are grain, rice, cotton, and sugar beet; and cattle are bred. The natural resources include coal, oil, copper, lead, zinc, gold, and silver. The retail trade turnover (1936) was 2·3 milliard roubles; and the output of industry (1936—at prices 1926–27), 604 million roubles. There are three important railway lines: Semipalatinsk–Tashkent in the south-east; Petropavlovsk–Kounrad in Central Kazakhstan; Aktyubinsk–Tashkent in the west. The length of railways (1936) was 5,228km.; and the freight carried, 18,356,000 tons. (S. YAK.)

KELLOGG, FRANK BILLINGS, American statesman; born at Potsdam, N.Y., Dec. 22, 1856; died at St. Paul, Minn., Dec. 21, 1937. A biographical notice may be found in the *Ency. Brit.*, vol. 13, p. 316. Mr. Kellogg received the Nobel Peace Prize for 1929, and in 1930 was appointed as a judge on the Permanent Court of International Justice at The Hague, where he served until his resignation in 1935.

KELLOGG, VERNON LYMAN, American zoologist; born at Emporia, Kan., Dec. 1, 1867; died at Hartford, Conn., Aug. 8, 1937. A brief account of his life and a list of his publications may be found in the *Ency. Brit.*, vol. 13, p. 316. In 1931, owing to illness, he resigned from his post as permanent secretary of the National Research Council.

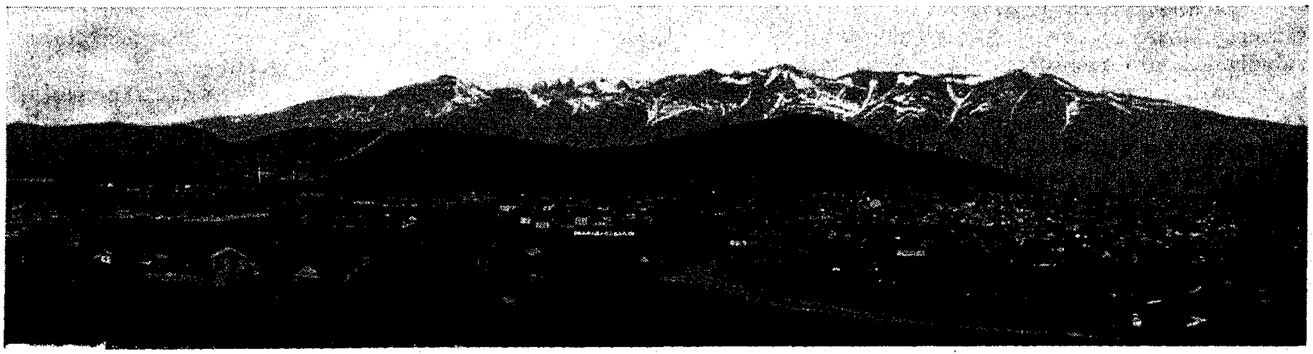
KENTUCKY: *see* UNITED STATES OF AMERICA, THE.

KENYA, a British crown colony and protectorate in east Africa, bounded N. by the Anglo-Egyptian Sudan and Ethiopia, E. by Italian Somaliland, S.E. by the Indian Ocean, S.W. by Tanganyika Territory and Lake Victoria, and W. by Uganda. The governor is Air Marshal Sir H. R. M. Brooke-Popham, K.C.B., C.M.G., D.S.O., who succeeded Brig.-Gen. Sir Joseph Aloysius Byrne in April 1937. The capital is Nairobi.

Area and Population.—Total area, 224,960sq.m. (the protectorate is a small coastal strip at the mouth of the Tana, rented from the Sultan of Zanzibar); pop. (est. 1935), 3,084,351, of whom Europeans numbered 17,997, Asiatics 39,898, and Arabs 12,599. The leading towns are Nairobi, Mombasa, and Kisumu.

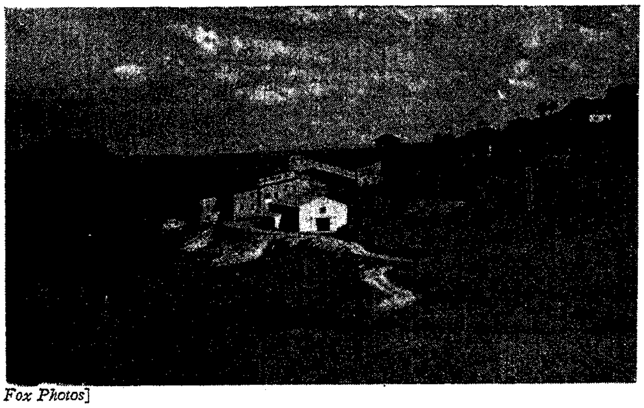
In 1936 sixteen missions had 1,397 elementary, 40 primary, and 2 secondary schools, with a total of 95,642 pupils. The government had also 11 primary and 38 village schools, one Native Industrial Training Depot, and one Jeanes School (mainly for teachers' practice), with a total of 4,520 pupils. There are government secondary schools for boys and girls.

History.—In April 1937, a bill was passed imposing an income-tax for the first time in the colony's history. In August the official membership of the executive council was reduced from 8 to 4; the number of unofficial members remaining at 4, for a fixed period of 4 years. A clash between Arabs and Luo tribesmen occurred in Mombasa on Aug. 26, in which four Arabs were killed and many of both parties



Planet News]

A GENERAL VIEW OF THE RIDDER WORKS IN KAZAKHSTAN



Fox Photos]

KENYA. A VIEW OF THE KIMINGIN GOLD MINE

wounded. A considerable number of refugees from Ethiopia entered Kenya during 1936 and 1937, and the government established a central camp for them at Isiolo, where a riot occurred in November, 9 deserters being killed and 10 of the K.A.R. wounded. In December Great Britain decided to bear the whole cost of maintaining these refugees, and of other special expenditure in Kenya consequent on the Ethiopian situation. Defence proposals put forward in Oct. included the creation of a minesweeping unit and the equipment with new weapons of the King's African Rifles. A meeting of Indian settlers at Nairobi in Nov. strongly condemned the proposed reservation scheme for white settlement.

Trade and Communications.—Owing to the customs union between Kenya and Uganda, an accurate estimate of the balance of trade is impracticable. The total value of imports during 1936 was £7,377,279; exports of the territories were valued at £8,354,774, goods to the value of £3,888,321 originating in Kenya. The main products are sisal, tea, wheat, and coffee; all except coffee being grown exclusively by Europeans. Prices of all products except sisal advanced in 1936. Gold was the most important mineral, the output being valued at £269,947.

The radio telephone service to Great Britain was inaugurated in 1936 and later extended to the continent of Europe. Work has been begun on three new trunk telephone services, and three short trunk services have been opened. No road extensions have been undertaken, but funds have been obtained from the Colonial Development Fund for roads in mining areas, and work was begun in 1936. There is a twice-weekly air service by Imperial Airways to Kisumu and Nairobi, and services to mining and other areas are operated by private companies. There are customs aerodromes at Kisumu, Nairobi, and Mombasa, and there are 12 official, 19 emergency, and 7 private landing grounds.

Finance.—Currency is controlled by the East African Currency Board in London; the unit being the shilling, sub-divided into 100 cents. There is a native poll-tax. Revenue for 1936 was £3,496,389, and expenditure £3,350,381.

Kenya has a native regiment, a battalion of the King's African Rifles, with regular British officers, and also an efficient African police force.

See Elspeth Huxley Macmillan, *White Man's Country*, 2 vols., 1936.

KIDNAPPING. While the crime of kidnapping is not confined to the United States, the number of cases in recent years and the efforts of the State and Federal governments to prevent its continuance have attracted special attention to the American problem. Progress was made in apprehending kidnappers and increasing penalties during 1937, but several sensational abductions proved that much remained to be done.

The year began with world interest aroused by the search for the captor of Charles Mattson, 10-year-old son of a Tacoma, Wash., physician, who had been seized while playing under his Christmas-tree. Efforts of the family to negotiate with the kidnapper were unavailing, and when the battered body of the boy was found on Jan. 11, federal investigators were free to undertake a relentless search for the killer. The year passed, however, without apprehension of the culprit.

The efficiency of the Federal Bureau of Investigation's work was fortunately not to be judged by the failure to locate the murderer of Charles Mattson. Indeed, it was during the search that J. Edgar Hoover, head of the bureau, reported that sixty-five cases of kidnapping and kidnap plots had been solved since the Federal kidnapping law of June 22, 1932, had provided for national participation. In four years, 158 convictions had been obtained (four death sentences, 31 for life, and the remainder for a total of 2,114 years), and three notorious cases of 1935–36 (the kidnappings of George Weyerhaeuser, Mrs. B. V. Stoll, and Edward Bremer) had been solved with convictions.

While no other case of 1937 matched the grimness of the Mattson kidnapping, Federal authorities had to deal with several other instances of abduction. In early February the kidnapper of Dr. J. C. Davis, of Willow Springs, Mo., was apprehended soon after he had lured the 67-year-old country physician to his death by a false call for medical aid. In June, Mrs. William H. Parson disappeared from her Long Island home; and although a ransom note was found, the mystery remained unsolved. Dr. James I. Seder, a 79-year old West Virginian, died of exhaustion in November after escaping from his captors, who were quickly arrested and convicted; while in December an Indiana baby and nurse were released by frightened kidnappers after being seized.

Another 1937 case was solved in Jan. 1938, when Peter Anders was seized at the Santa Anita race track while betting with ransom money received from the family of Charles S. Ross, a Chicago merchant who had been kidnapped in September. Anders's confession that he had killed both Ross and a confederate marked the climax of painstaking Federal investigation.

Federal action against kidnapping was supplemented by State action. The legislation most frequently suggested was a compulsory death penalty, which was discussed in Pennsylvania, Georgia, New Hampshire, Connecticut, Rhode Island, and Colorado. A different approach was the prohibition of ransom payments, urged by Senator Ashurst of Arizona and debated in the States of Massachusetts and Washington. The danger of mandatory death penalties was made clear by the frequent instances of children seized by divorced parents or love-starved women. Firm action in all cases, however, seemed the only way of discouraging kidnapping attempts.

Outside of the United States, the leading kidnapping case of 1937 was the abduction and murder of two-year-old Eugenio Pereyra Iraola, son of an Argentine cattle rancher, in late February. His confessed kidnapper committed suicide soon after capture. Elsewhere, seven Canadians were released after pleading guilty to seizing an employer and transporting him to the United States border; and

French authorities were urged to investigate the disappearance of General Eugene Miller, who disappeared in August, leaving a note saying he feared abduction.

KIEL CANAL. As a further step in the renunciation of the provisions of the Treaty of Versailles for the international regulation of inland waterways, Germany, on Jan. 16, 1937, resumed full sovereignty of the Kiel Canal. According to the new regulations published by the Naval High Command, the passage of the warships and naval craft of foreign Powers through the canal is permissible only with authorization obtained beforehand through diplomatic channels.

Plans have also been announced for boring a tunnel a mile and a half long and 100ft. wide, under the canal, to take a new Reich motor road from Hamburg to Flensburg on the Danish-German frontier.

KING, WILLIAM LYON MACKENZIE (1874–), Canadian statesman. A biographical notice may be found in the *Ency. Brit.*, vol. 13, pp. 392–93. He became prime minister for the third time, Oct. 23, 1935. On March 5, 1937, Mr. King paid a friendly visit to President Roosevelt at the White House, Washington. He headed the Canadian delegation to the coronation of King George VI and Queen Elizabeth on May 12. At the opening of the Imperial Conference in London on May 14, Mr. King declared himself in favour of peace and freer trade. After the Imperial Conference ended on June 15 he visited Aberdeen, and later officiated at the inauguration of Canada's World's Fair Pavilion, Paris, June 23. On a journey to Germany, Mr. King met Herr Hitler on June 29, and on July 1 King Leopold of Belgium.

As prime minister of Canada he announced that his government would join in the parley on the nine-power treaty of 1922 with respect to the situation in the Far East; that any expenditures on armaments were for the defence of Canada and not for defence of the British Empire; and, on Nov. 18, that negotiations would be opened for a revised Canadian-United States reciprocal trade pact in the light of the proposed new Anglo-American trade agreement.

(J. T. C.)

KING GEORGE'S JUBILEE TRUST, inaugurated March 1, 1935, to commemorate the Silver Jubilee of King George V of Great Britain by advancing the welfare of the younger generation, had in 1937 a general fund of £971,392. In the year 1936–37, £100,000 was expended from the funds in grants to a number of camping and other national juvenile organizations; the purchase of the Ardgartan Estate in Argyllshire, Scotland, for the Scottish Youth Hostels Association; the equipment of a permanent camp at Hawthorn Tower, Durham, for boys and girls from the North of England; the establishment of 'King George's House', a hostel in London for homeless boys and those in search of work; and other similar purposes. Thirty boys were sent to the International Youth Rally at Berlin. It is the intention of the Trustees to spend a portion of the capital during the next few years, reserving the major part as a permanent fund.

King George's Jubilee Trust]

THE LIBRARY AT KING GEORGE'S HOUSE, BURGH HEATH, SURREY

KING GEORGE'S NATIONAL MEMORIAL FUND, THE, was established in 1936 to provide a permanent memorial of the life and reign of King George V of Great Britain; by Oct. 1937, £589,000 had been subscribed to the Fund, which it was decided in May 1936 should be devoted in part to the erection of a memorial statue on a site in Abingdon Street, Westminster, and in part to the provision of playing fields in Great Britain, for which latter object a trust, the King George's Fields Foundation, was established. By Dec. 31, 1937, a total of £395,000 had been allocated to the purposes of this foundation, and £62,000 of this sum expended in grants to 118 approved schemes, while applications in respect of 600 further schemes were under investigation. In the early months of 1938, plans for the statue had been definitely passed, but the clearing of the site had not been completed.

KIRGHIZ S.S.R., a Central Asiatic Soviet Republic, a member of the U.S.S.R. (*q.v.*) bordering on the republics of Kazakhstan, Uzbekistan, and Tajikistan, and in the east on China. The capital is Frunze (formerly Pishpek); and the national flag has a red ground, with the name of the republic in Kirghiz and Russian in gold in the top left corner. Leading cities, with 1936 populations, are: Frunze, 86,300; and Kizil-Kiya, 13,500.

Area and Population.—Area: 197,000sq.km. Population (1933), 1,302,000 (rural 1,100,000, urban 202,000), of whom 66·6 per cent. were Kirghiz, 11·7 per cent. Russians, and 11 per cent. Uzbeks. The chief languages spoken are Kirghiz, Russian, and Uzbek. In 1936–37, the total number of schoolchildren was 227,000, and there were 1,600 elementary schools, 167 secondary schools, 3 higher educational institutions, and 14 technical colleges.

History.—The adoption of the new Kirghiz constitution by the Fifth Extraordinary Soviet Congress in Frunze on March 23 brought to the formerly politically and economically backward republic an important change in its status in the Soviet Union. Until 1924 a part of Kazakhstan, and later an autonomous republic of the R.S.F.S.R., Kirghizstan now takes the position of an equal independent Union Republic of the U.S.S.R. It includes 45 districts, 5 towns, and 3 workers' settlements. 94·3 per cent of the population took part in the elections to the Supreme Council of the U.S.S.R. on Dec. 12.

Trade and Communications.—Sown area (1936), 3,847sq.m. In 1937, 89·1 per cent. peasant households were collectivized. The chief agricultural products are grain (mainly wheat), cotton, tobacco, sugar-beet, and poppy; and there is important stock-breeding. The natural resources include coal, gold, non-ferrous metals, radium, sulphur, oil, mercury, and water-power. The retail trade turnover (1936) was 0·5 milliard roubles. The output of industry (1936, at prices 1926–27) was 114 million roubles. There is a lack of railways and other means of transport, the length of railways (1936) being only 162km. (S. Yak.)

KNITWEAR: *see* TEXTILE INDUSTRY.

KNOX, EDMUND ARBUTHNOTT, D.D., British clergyman; born at Bangalore, Dec. 6, 1847; died Jan. 16, 1937. He was educated at St. Paul's School, and Corpus Christi College, Oxford. After holding two incumbencies in Birmingham, he was, from 1894 to 1903, Suffragan Bishop of Coventry; but it is as Bishop of Manchester, 1903–21, that he is chiefly known. He was a redoubtable leader of Evangelical opinion within the Church of England, and many of his publications were devoted to that cause. In 1935 he published *Reminiscences of an Octogenarian, 1847–1934.* He married, in 1878, Ellen Penelope French (*d.* 1892), and, secondly, in 1895, Ethel Mary Newton, and had four sons and two daughters. Of his children, E. V. Knox is the editor of *Punch*; Mgr. Ronald Knox is Roman Catholic chaplain at Oxford, and the others are hardly less distinguished.

KONOYE, FUMIMARO (1891–), Japanese Prince; son of Prince Atsumaro Konoye; born in Kyoto; president of the House of Peers 1931–37; premier since June 1937, has long been regarded as one of the most promising of Japan's younger political leaders and enjoyed the special confidence of the venerable Genro, or last surviving Elder Statesman, Prince Kimmochi Saionji. Konoye was offered the post of premier after the Feb. 26 incident of 1936, but declined on the ground of weak health. He formed a cabinet in June 1937, after the resignation of the previous premier, General Senjuro Hayashi (*q.v.*). Konoye soothed the feelings of the political parties, which had been ostentatiously snubbed by his military predecessors, by giving them representation in his cabinet and by restoring the office of parliamentary vice-ministers, creating more contact between the parties and the state administration. At the same time his outspoken Pan-Asianism and reputed nationalist views made him acceptable to the Army. His period of office has been almost entirely overshadowed by the Sino-Japanese War (*q.v.*). During Konoye's premiership the cabinet, as an organ of administration, was supplemented by two new organizations: the cabinet advisory council, consisting of 10 members, representing the fighting services, the political parties, diplomacy, business and financial interests; and the imperial headquarters, a group of high military and naval officers. (W. H. CH.)

Wide World Photos]

PRINCE KONOYE

KOREA (*Chosen*), a part of the Japanese Empire, is a peninsula extending southward from the north-eastern part of the continent of Asia. Its eastern coast faces the Sea of Japan, its western coast the Yellow Sea; and it borders Manchukuo and the far eastern territory of the R.S.F.S.R. on the north. Area 85,206sq.m., including 1,018 islands. Population (Dec. 31, 1935), 21,891,180, including 583,428 Japanese and 105,821 Chinese and other foreigners. The capital is Seoul (Keizyo), population (1933) 382,491. Other cities: Fusan (139,538, 1931); Phyŏng-yang (Heizyo) (144,215); Taikyu (102,180). Governor-general, General Jiro Minami (since 1936). It is administered by the government-general, which has eight administrative offices. The governor-general is assisted by a consultative body known as the central council, consisting of a chairman and vice-chairman, five advisers, and 65 councillors.

Trade and Communications.—Korea's foreign trade is mainly with Japan. Exports in 1935 were valued at 550,796,000 yen and imports at 659,403,000 yen. Of the exports, 485,893,000 yen worth were sent to Japan, and 558,813,000 yen worth of imports were purchased from Japan. There were 3,389km. of railways in Korea in 1935 and 27,456km. of highways. There were 870 steamers, with a tonnage of 64,641 and 10,502 sailing-boats, with a tonnage of 134,386. There are three airports, at Seoul, Phyŏng-yang, and Urusan, and regular air communication is maintained with Japan and Manchukuo. The total length of telephone and telegraph lines is 9,531km. and 8,758km. respectively.

Korea is overwhelmingly an agricultural country, and over 80 per cent. of its population is engaged in farming. Rice is the main crop, production in 1935 reaching the figure of 89,400,000bu., of which a little more than half was exported to Japan. Other agricultural products include wheat, barley, soya beans, apples, cotton, sugar-beets and silk. Gold is the most valuable mineral resource; its output in 1935 was valued at 38,320,000 yen (about £2,100,000), and gold-mining is receiving a good deal of State encouragement. Other mineral products are iron, coal, lead, and tungsten. Manufacturing industry is developing, the most important industries being foodstuffs, chemicals (especially fertilizer), and textiles.

Banking and Finance.—The unit of currency is the Japanese yen (worth 1*s.* 2*d.* at the end of 1937). The Bank of Chosen is the central banking institution, and there are 10 other banks, with deposits totalling 567,754,000 yen. The budget for 1936 was 317,875,960 yen.

Education and Religion.—Korea in 1935 had 3,079 schools of all kinds, with 872,043 students. There are a number of Christian mission schools in the country. Prevalent forms of religion among the Koreans are Buddhism, Taoism, and Confucianism. There were 441,419 Christians in Korea in 1934. (W. H. CH.)

KRAMAR, KAREL, Czech statesman; born in Bohemia, Dec. 27, 1860; died in May 1937. Having become a Doctor of Law at Prague University, and studied in other European capitals, he became leader of the Czechs in the Austrian parliament. Arrested in 1915, he was convicted of high treason in 1916, and sentenced to be hanged; but this sentence was commuted to life imprisonment; and, when the Emperor Charles granted an amnesty on his accession in 1917, Kramar was released. In 1918 Dr. Kramar became the first prime minister of Czechoslovakia; but his policy was too conservative to be popular, and his relations with Masaryk and Beneš were not happy, and he resigned in 1919. In 1923 he published *Russian Crisis*, in which he gave vent to his antipathy towards the Bolshevists.

KRYLENKO, NIKOLAI VASILEVICH (1885–), Russian soldier and politician; born in Lublin, Poland; was prominent as leader of revolutionary students, 1905–08; and during the World War was an ensign in the Tsarist army, but took part in the mutinies of 1917 and was arrested at the front, July 7. In October he presided at the Northern Regional Congress of Soviets at Petrograd, was elected a member of the Presidium and one of the committee of three supervising the War Department, and was appointed (Nov. 21) commander-in-chief of the rapidly dissolving army. It was he who applied (Nov. 26) to the Germans for the armistice that was concluded at Brest-Litovsk (Dec. 15); on Dec. 3 he had secured the surrender of the Russian General Staff at Mohileff, but, being more useful as a politician than a general, was relieved of his command in March 1918. He subsequently held various offices in the R.S.F.S.R., including that of State prosecutor and was commissar of justice from 1931 till September 1937, when he was removed from office as an 'unmasked enemy of the people'.

KU KLUX KLAN. The hooded brotherhood, organized by southern whites in 1866 as an influence against negroes after the Civil War, was revived by William Joseph Simmons on Thanksgiving Day, 1915, as an 'invisible empire' of 100 per cent. Americans determined to apply extra-legal pressure, not only upon the coloured population, but upon Jews and Roman Catholics. It did not prevent, however, the nomination of Alfred E. Smith, a Roman Catholic, as Democratic candidate, in 1928, nor the election of Herbert H. Lehman, a Jew, five times as Governor of New York State. Feeling was aroused in 1937 when President Roosevelt appointed Senator Hugo L. Black of Alabama as Associate Justice of the Supreme Court. After the approval of the appointment by the Senate, it was stated that the new justice was or had been a Klansman. Early in October, Mr. Black's published statement was, that, though he had joined the Ku Klux Klan about 15 years before, he had since resigned.

KUOMINTANG: *see* China.

KURDISTAN: *see* Turkey.

KUWAIT: *see* Arabia.

KWANTUNG: *see* Japan.

KYLSANT, OWEN COSBY PHILIPPS, 1st Baron, of Carmarthen, G.C.M.G., British ship-owner; born March 25, 1863; died June 5, 1937. In 1902 he was appointed chairman of the Royal Mail Steam Packet Company, around which the Kylsant group of shipping lines became centred. (For an account of this group, *see Ency. Brit.*, vol. 20, p. 559, *s.v.* Shipping Lines and Groups). Lord Kylsant's connexion with shipping ended unfortunately in a sentence of 12 months' imprisonment for circulating a false prospectus, but he was the victim of circumstances and the slump, and his personal reputation suffered little. He had been M.P. for Pembroke and Haverfordwest, 1906–10, as a Liberal, and for Chester, 1916–18 and 1918–20, as a Unionist. He was created a G.C.M.G. in 1918, and in 1923 was raised to the peerage. In 1902 he married Mai Morris, C.B.E., and is survived by her and three daughters. The peerage became extinct at his death.

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LABOR UNIONS: *see* TRADE UNIONS: *United States.*

LABOUR. Over the world as a whole the level of production and employment continued to advance rapidly during the greater part of 1937. In every important country the numbers of workers recorded as employed were substantially higher in 1937 than they had been in the corresponding months of 1936, though in many countries they were still considerably below the numbers employed in 1929, before the beginning of the world slump. The relevant figures for a number of countries are given in the accompanying table, which, taking 1929 as its base, represents the volume of employment by means of an index number. The average for the year 1932 is given in order to show the fall of employment during the world slump; and figures are added for the latest available month in 1937 and for the same month in 1935 and 1936, in order to show the extent of recovery as apart from seasonal fluctuations.

Of course, the increase in employment does not involve a corresponding decrease in the numbers unemployed, as population has increased, and in most countries the occupied population has risen somewhat faster during the past few years than the population as a whole. But the International Index of Unemployment (1929 = 100) compiled by the International Labour Office, which stood at 291 in 1932, had fallen to 95 in June 1937, or actually below the 1929 level. This is slightly misleading, as the 1937 figure has not been adjusted for seasonal variation. In June 1936 the corresponding index figure was 137, but the adjustment raised it to 151. The adjusted figure for June 1937 should be about 105—rather above the pre-slump level.

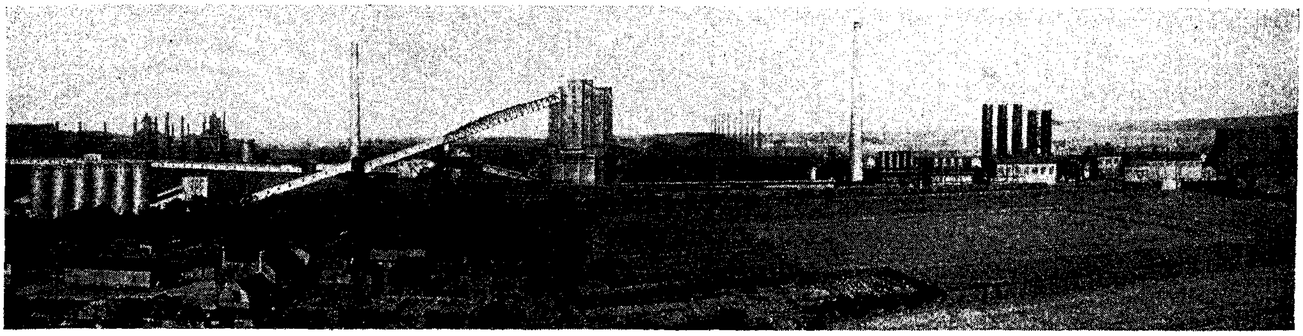
EMPLOYMENT
(1929 *average* = 100)

	Average of 1932	Corresponding month of			Month
		1935	1936	1937	
GREAT BRITAIN (insured workers)	92	102	108	113	Sept.
U.S.A. (manufactures only)	63	80	91	97	Sept.
FRANCE (1930 = 100)	81	75	75	81	Sept.
GERMANY (sickness insurance returns)	71	95	102	109	Sept.
ITALY	78	98	94	106	June
JAPAN	82	111	116	129	June
POLAND	64	75	83	94	Sept.
CZECHOSLOVAKIA	83	82	89	96	Sept.
SWITZERLAND	76	70	70	80	Sept.
HOLLAND	79	75	73	82	Sept.
BELGIUM	78	82	88	90	Aug.
CANADA	72	89	92	105	Sept.
S. AFRICA	87	115	125	131	July
International Index of Unemployment.					
Adjusted for seasonal variation	291	194	151	—	June
Unadjusted for seasonal variation	291	181	137	95	June

In the latter part of 1937 a recession began to develop in the United States, partly on account of the government's retrenchments in public expenditure and partly on account of the dislike of Big Business for President Roosevelt's policies. The American index of industrial production (1923–25 = 100) fell from 122 in May to 109 in Sept. 1937, and that of factory payrolls from 105 to 100. The recession in the United States reacted on stock exchange conditions and on investment in Great Britain, and the level of unemployment rose in the autumn and early winter, the rise being spread over most industries except those affected by the rearmament programme. The decline in employment, however, was not large; and in general the demand for labour remained high, though on account of the persistence of bad conditions in the depressed mining and textile areas, registered unemployment was at about 1½ millions in Nov. 1937. In October the percentage unemployed in different regions ranged from 21 per cent. in Wales and 16 per cent. in the Northern Region to 7 per cent. in the Midlands, 6½ per cent. in the South-east and 6 per cent. in London. The great activity in the heavy industries in connexion with rearmament had, however, considerably decreased unemployment on the Clyde and in the North-east and South Wales as compared with a year earlier.

Among the outstanding causes of the world recovery in employment, the following seem to be the most important: the improvement of conditions in the United States—itself largely due to the restoration of purchasing power through the outpouring of government money under the New Deal; the bettered purchasing power of the primary producing countries owing to the higher prices of foodstuffs and materials—itself influenced by the increase in American demand as well as by harvest conditions and the stimulus given by rearmament; the intensive rearmament in most of the European countries and in Japan; and the great impetus given to gold production and to the purchasing power of the gold-producing countries, especially South Africa and the Soviet Union, by the high price of gold. To these must of course be added the impulse to build up depleted stocks of commodities at all stages of production and to put arrears of maintenance and construction in hand during the early phases of an expansionist movement; and also—a factor of very great importance—the readiness of governments and central banks to keep the supplies of credit abundant and prevent interest rates from rising as a consequence of expanding demand.

Thus, United States imports, which had fallen from a monthly average of 362 million dollars in 1929 to one of 110 millions in 1932, rose to 296 millions in March 1937. Then came a decline; but imports were still at 234 millions in Sept. 1937, as compared with 218 millions a year before, and 169 millions in Sept. 1935. The American index of prices of primary products (Sept. 1931 = 100) rose from 84 in July 1932 to 200 in March 1937. Thereafter, it fell sharply to 139 at the end of November; but there had not been time by the end of the year for this fall to react seriously on the purchasing power of the primary producing countries, which had ample liquid funds in hand. British prices of primary products fluctuated less, the indices for the corresponding dates being 102, 182, and 145. But it



Iron and Steel Industry]
THE NEW BY-PRODUCT COKING PLANT AT CLEVELAND IRON WORKS, NEAR MIDDLESBROUGH

was obvious, by the end of 1937, that the American recession could not continue for long without serious repercussions on the rest of the world, even if these repercussions took some time to become manifest.

In Great Britain especially the level of economic activity in 1937 was influenced by the coincidence of rearmament activity with the continued boom in building. This boom, based mainly on low interest rates, reached its peak in the middle of 1936, when the index for building activity as a whole (1929 = 100) reached 210, and for industrial buildings only 241. Thereafter activity fell off; but it was still at 156, for building as a whole, in July 1937, after which there was some further decline, but not very much beyond the normal seasonal variation. It was, however, regarded as certain that house-building would fall off further, in the absence of a new government housing scheme on a large scale; for the demand for houses of the types which private enterprise was prepared to erect without subsidy was nearing saturation point in many areas. Flat-building, however, still remained active, and so did industrial building in connexion with rearmament and the building of garages, cinemas, and other amenities in the newer residential districts. Nor was it certain whether the factory-building phase of rearmament had yet reached its peak. In general, building activity was expected to fall, but not precipitately, during 1938.

Over the entire period from 1929 to 1937, the most important single factor in employing additional labour in Great Britain has been the growth of the distributive trades. If 1923 is taken as 100, the index for the number of workers in these trades rose to 136 in 1929 and to 162 in 1932. After 1932 the increase became small. The index was 163 in 1935, 166 in 1936, and 167 in 1937 (July). The rapid advance of these trades has been largely due to the movement of population to new districts, as a result of the migration of industry and of rehousing in suburban areas—new shops being opened much faster than old ones have been closed. But this expansion seems now to be reaching its limit; and this has an important bearing on the future level of employment, as between 1923 and 1937 the distributive trades absorbed 807,000 additional workers, whereas all manufacturing industries taken together absorbed only 485,000. Over the same period, building and public works construction absorbed 485,000, transport 119,000, and the 'services', including public utilities, government and commerce, 560,000. Mining reduced its personnel by 374,000; and there was a contraction of 437,000 in the relatively depressed textile and metal industries (which are also included above in the manufacturing group). The total increase for all insured occupations was 2,211,000.

Thus in Great Britain the occupational distribution of the employed population has been changing rapidly in recent years. In 1923 manufactures employed 51 per cent. of the insured workers, in 1937 only 47 per cent. Mines and quarries accounted for 11½ per cent. in 1923, and only 7 per cent. in 1937. On the other hand, transport and distribution rose from 18 per cent. to nearly 22 per cent., and building and public works from 7 to nearly 10. Services, apart from transport and distribution, rose from 12 to 14 per cent. Agriculture, which is not included in these figures, underwent a continuous decline in the numbers employed, despite the protective measures applied to it during the slump.

These occupational changes connote a considerable increase in the proportion of black-coated workers. Moreover, within the group of manufacturing industries, there has been a big shift from old to new trades; and this has usually meant a decrease in the proportion of heavy to light industries, and of skilled to less-skilled workers. The largest increases have occurred in the finishing trades serving the consumers' market and in the electrical equipment trades as a result of the construction of the 'grid'. In 1937 this movement of labour into the lighter trades was to some extent reversed by the activity of the metal and heavy engineering trades as a consequence of rearmament; but the rapid development of mechanization in the steel industry prevented the growth of output from causing any large increase in the demand for labour. Heavy engineering, being less susceptible to mechanization, did make considerably greater demands for skilled workers.

In general, the shift to new industries and to less skilled types of labour has been unfavourable to the growth of trade unionism, which has hitherto had its chief strength in the industries using a high proportion of skilled workers. In Great Britain, trade union membership fell from about 5 millions in 1927, after the General Strike, to 4,389,000 in 1933. There was then some advance as industry gradually recovered from the slump; and total membership rose to 4,842,000 at the end of 1935. By the end of 1937 it was probably about 5½ millions—approximately the same as in 1925, but considerably less as a percentage of the occupied population. A beginning has been made in organizing the workers in the newer mass-production industries; but these workers, who include a high proportion of women and move fairly easily from one industry to another, are not easy to organize, as they have not the same continuous interest in conditions in one particular occupation as the skilled workers in the older trades.

In the United States, however, a determined attempt was being made in 1937 to unionize the workers in the mass-production industries—steel, automobiles, rubber, chemicals, etc. American trade unionism, under the control of the American Federation of Labor, has hitherto been organized for the most part strictly on a craft union basis, and has failed to enrol the workers in these industries, who have either remained unorganized, or been enrolled in ' company unions ' under the auspices of the big firms. In 1936 certain big unions belonging to the A.F. of L., headed by the United Mineworkers and the Amalgamated Clothing Workers, formed the Committee for Industrial Organization, and set out to organize the mass-production industries on industrial union lines. This led to a split, the A.F. of L. finally expelling from membership the unions which adhered to the C.I.O. The C.I.O., favoured by the New Deal legislation against company unionism, forged ahead rapidly, under the leadership of John L. Lewis of the Mineworkers; and important victories, including recognition of the C.I.O. unions as well as wage advances, were won, especially in the steel and automobile industries. By the end of 1937 the C.I.O. had gone a long way towards destroying company unionism, and its membership exceeded that of the unions which remained faithful to the A.F. of L. Many big employers, however, were waiting for a chance to hit back, and the stability of the C.I.O. unions was still uncertain. In face of the common danger and opportunity, attempts were being made late in 1937 to achieve a reconciliation between the two wings of the American trade union movement, but without much hope of success.

In France, as a sequel to the formation and election victory of the *Front Populaire* and to the fusion of the two rival Trade Union Federations in 1936, there has been an even more remarkable growth of trade union strength. In March 1936 the *Confédération Générale du Travail* (the French Trades Union Congress) had about 1,300,000 members. A year later its affiliated membership had risen to more than 5 millions. Membership rose in the building and woodworking trades from 65,000 to 540,000, in the metal trades from 50,000 to 775,000, and in the food and drink trades from 15,000 to 300,000. Among textile workers it increased from 47,000 to 300,000, and among clerks and shop assistants from 1,500 to 285,000. These immense increases were the outcome of the great spontaneous movement, among organized and unorganized workers alike, for the 40-hour week and the full recognition of the rights of collective bargaining. As a consequence the 40-hour week was introduced in most of the major industries in 1936 or the early part of 1937, and trade union recognition was conceded in the great majority of trades and establishments. Up to the end of 1937 these concessions had been for the most part successfully held, despite the replacement of a predominantly Socialist government by that of M. Chautemps, which is predominantly Radical. The employers argued that the high costs involved were hampering economic recovery; but after a difficult period in the early part of 1937, the French index of employment began at last to move slowly upward.

In the Fascist countries trade unionism remains in any real sense non-existent; for both the Fascist trade unions in Italy and the German ' Labour Front ' are rather means of disciplining labour in the service of the totalitarian state than of enabling the workers to express their grievances or to establish any control over the conditions of employment. The strength of trade unionism is concentrated in the democratic countries. Late in 1937 an attempt was being made to unite for anti-Fascist action the two rival trade union Internationals—the International Federation of Trade Unions, based chiefly on the British, French, American, and Scandinavian Unions, and the Red International of Labour Unions, which is based on the Russian movement. The accompanying table sets out the strength and affiliations of the trade union movement in the leading countries as it was in 1936—figures for 1937 not being yet available. The table includes, where figures are available, unions of other types, such as the Christian Unions which exist in many continental countries, and organizations of black-coated workers or others unconnected with the national trade union centres.

TRADE UNIONISM IN 1936

Membership in thousands

	I.F.T.U. or of kindred type	Communist or of kindred type	Christian	Miscellaneous	Fascist or Corporative
GREAT BRITAIN	3,615	—	—	1,500	—
FRANCE . .	1,300 *	310	158	?	—
BELGIUM .	565	—	297	72	—
HOLLAND .	287	—	336	67	—
DENMARK .	381	—	—	54	—
SWEDEN .	701	—	—	86	—
NORWAY .	215	—	—	6	—
POLAND . .	289	—	247	294	—
U.S.S.R. .	—	20,260	—	—	—
SWITZERLAND .	297	—	53	65	—
GERMANY .	—	—	—	—	?
AUSTRIA .	—	—	160	—	338
ITALY . .	—	—	—	—	4,851
SPAIN . .	1,627	?	?	?	—
U.S.A. . .	3,422 †	—	—	?	—
ARGENTINA .	250	—	15	24	—
MEXICO . .	53	—	—	946	—
CANADA . .	167	—	38	21	—
AUSTRALIA .	600	—	—	287	—
NEW ZEALAND	63	—	—	—	—
INDIA . .	189	—	—	?	—
JAPAN . .	264	—	—	144	—

(G. D. H. C.)

* Over 5 millions in 1937.

† Not including the new unions organized under the C.I.O.

LABOUR ARBITRATION: *see* ARBITRATION, INDUSTRIAL.

LABOUR LEGISLATION: *see* LEGISLATION, INDUSTRIAL.

LABOUR PARTY, THE. The most important developments in the Labour Party in 1937 were the adoption of the party's new ' Immediate Programme ' and the revision of the Constitution so as to give greater weight to local Labour Parties in comparison with trade unions. The local parties will in future have seven, instead of five, representatives on the Party Executive (as compared with twelve from the trade unions and one from the miscellaneous affiliated bodies). Moreover, whereas the actual election has hitherto been made by the whole Conference, so as to give the trade union ' card vote ' the preponderance in the choice of local as well as trade union members, the local Labour Parties and the trade unions will in future choose their own representatives. This change was the outcome of considerable friction inside the Party. It was strongly pressed for by an unofficial Association of Constituency Labour Parties, of which Sir Stafford Cripps was chairman. This body, having secured the desired change, seems now to have suspended operations, the Party Executive having promised to institute machinery for more effective consultation of the local parties, especially by means of regional conferences. It was part of the settlement, reached at the Bournemouth Conference in Oct. 1937, that no further change should be made in the Party Constitution for three years.

The Party Conference rejected proposals for a United Front with the Communist Party and Mr. Maxton's Independent Labour Party, thus in effect upholding the action of the executive in expelling the Socialist League earlier in the year for participating in the 'United Front Campaign'. The Socialist League had thereupon dissolved; but at Bournemouth Sir Stafford Cripps and Prof. H. J. Laski, both leading advocates of the United Front, were elected to the executive by the local Labour Parties under the revised Constitution.

The new Short Programme (or Immediate Programme) of the Labour Party differs from earlier programmes in being not inclusive but selective. Its intention is to include only such measures as an incoming Labour government could expect to be able to deal with during its first period of office, or within the life of a single Parliament. It includes public ownership of the Bank of England (but not of the joint-stock banks), and of certain key industries (coal, electricity, gas, railways), co-ordination of transport services under public control, powers of easier land acquisition for public purposes, and public control over the location of industry in the interests of the distressed areas. It declares against a return to the gold standard, and for an adjustment of taxation designed to secure a better distribution of wealth. Special emphasis is laid on the need for increased food production with a view to improved nutrition, a living wage for landworkers, and a narrowing of the margin between wholesale and retail food prices. The programme includes a scheme of improved invalidity pensions and retiring pensions for elderly workers, the effective raising of the school age to 15 (and later to 16) with maintenance allowances, a new Workmen's Compensation Act, and the abolition of the Means Test. In international policy, it declares strongly for a system of collective security under the League of Nations, and pledges a Labour government to maintain armed forces adequate to implement this policy, and to democratize and improve conditions in the armed forces. At the Conference the Party also adopted a special statement on the rearmament question (also approved by the Trades Union Congress) declaring in favour of adequate defence measures, but insisting that armaments should be an instrument of a policy of collective security, and not a means to isolation. Party membership rose during the year, both in the trade unions and in the local Labour Party section. Trade union affiliated membership now exceeds 2 millions, and individual membership in local parties is approximately half a million.

(G. D. H. C.)

LABRADOR, the most easterly portion of N. America, marching landward with the Canadian province of Quebec, and facing the Atlantic to the east; a dependency of Newfoundland; area, *c.* 115,000sq.m.; population (1935), 4,700, mainly Eskimos. There are no towns. The people are occupied in hunting and in the valuable cod, salmon, and other fisheries. There are about 50 postal stations, but no railways, roads, or regular air communications. For trade and financial statistics, *see* NEWFOUNDLAND.

LABUAN: *see* STRAITS SETTLEMENTS.

LACCADIVE ISLANDS: *see* MADRAS PRESIDENCY.

LACROSSE. Lacrosse continued its popularity in Great Britain, the United States, and especially Canada during 1937. The results of the international and other important matches in Great Britain and Ireland were as follows: England beat Wales 10–3, Scotland 12–0, and Ireland 14–3; Scotland beat Ireland, and Wales 6–1; Ireland beat Wales 9–6; Oxford and Cambridge drew 2–2; Mellor beat Hampstead 10–7 for the British championship; Cheshire won the County championship, beating Middlesex 18–3; the North beat the South 16–5; Oxford women beat Cambridge women 11–4.

Sport and General]

WOMEN'S LACROSSE AT OXFORD

The significant development was the tremendous increase in the United States. Playing games with many of the teams of their Canadian neighbours, American colleges included the game as a university sport on athletic programmes, additional clubs took it up, and countless secondary schools added it to the sports curriculum. The national open lacrosse title passed from the hands of the Mount Washington Club to the Baltimore Athletic Club in a game at Baltimore, Maryland. Previously, the Mount Washington Club, considered by North American observers as one of the finest in the sport, had won 33 consecutive games. The University of Maryland clinched the national collegiate championship by vanquishing Penn State. The United States Intercollegiate Lacrosse Association sponsored and managed a composite all-American team in a series of exhibition games in England during the summer. Players were chosen for the American 10 from among the leading college stars, some of the club athletes, and a few with a natural talent for the game. The American team met with a measure of success against some English opponents, but found others too strong. The exhibition series wound up with the American squad having broken about even on games won and lost. The club teams playing lacrosse in Canada, England, and the United States all reported good seasons.

LA GUARDIA, FIORELLO H. (1882–), mayor of New York City, was born on Dec. 11, 1882. In 1921, he was the first Republican in 20 years to be elected aldermanic president of New York. There followed 10 years in Congress (1923–33). He was elected mayor of New York City in 1933, and was re-elected in 1937.

Mayor La Guardia's activities during 1937 were not confined to his re-election campaign. In March, for example, he roused Germany to diplomatic protests when he attacked Herr Hitler in an address before the women's division of the American Jewish Congress. Locally he concentrated his attention on the speedy inauguration of a Federal housing programme, the continuance of Federal relief, and the protection of labour interests. The support of labour which assured his re-election was a result of his championship of the Federal child labour amendment, his desire for a complete unionization of New York workers, and his successful mediation in strike disputes. As the year closed, the only question regarding the mayor's political future was whether he would complete his term or take advantage of his popularity to seek some higher office.

LANG, COSMO GORDON: *see* CANTERBURY, ARCHBISHOP OF.

LANGUAGES. In stating the number of speakers of any language, we have the difficulty not only of ascertaining the facts, but of interpreting them. Compromising and adjusting as well as the facts allow, we may give the following table of the principal, and some other, languages of the world with estimated numbers of speakers:

American Indian Languages	500,000
Arabic	25,000,000
Australian Aboriginal	150,000
Basque	500,000
Bengali	50,000,000
Bulgarian	4,500,000
Burmese	7,000,000
Chinese	430,000,000
Czech	8,500,000
Danish, Icelandic, Norwegian and Swedish	12,000,000
Dravidian Languages	65,000,000
Dutch	10,000,000
English	180,000,000
Eskimo	30,000
Esperanto	100,000(?)
Finnish	3,000,000
French	45,000,000
Gaelic (Irish and Scottish)	600,000
German	80,000,000
Gipsy	500,000
Greek	5,500,000
Hindustani	90,000,000
Hungarian (Magyar)	20,000,000
Italian	40,000,000
Japanese	55,000,000
Malay	1,000,000
Oceanic (Polynesian and Melanesian)	50,000,000
Persian	10,000,000
Polish	30,000,000
Portuguese	37,000,000
Pushtu	5,000,000
Rumanian	16,000,000
Russian	85,000,000
Siamese	5,000,000
Sinhalese	3,000,000
Spanish	65,000,000
Turkish	7,000,000
Welsh	2,000,000

See J. R. Firth, *Speech*; Meillet et Cohen, *Les Langues du Monde.* (H. O. Co.)

LANSBURY, GEORGE (1859–), British Labour politician, first commissioner of works 1929–31, and leader of the Labour Party in Parliament 1931–1935, resigning in that year, chiefly because he was unable to align himself with the party in its co-operation with the National Government's rearmament proposals, and thereafter devoting himself to pacifist activities. During 1937 Mr. Lansbury undertook a series of visits to European statesmen in an endeavour to smooth the way to a world understanding on political and economic problems; on April 19 he met Herr Hitler in Berlin, and after an interview of over two hours, an agreed statement was issued to the effect that Germany was willing to attend a world conference on economic co-operation. On July 9, visiting Rome, he conferred with Signor Mussolini and Count Ciano on the possibility of such a conference, reporting on his return to London that he had been sympathetically received by those statesmen. At the end of the year Mr. Lansbury was planning to visit other European capitals on a similar errand.

Russell, London]

MR. GEORGE LANSBURY

LAOS: *see* FRENCH INDO-CHINA.

LÁSZLÓ DE LOMBOS, PHILIP ALEXIUS, British portrait-painter of Hungarian birth; born in Budapest, 1869; died at Hampstead, London, Nov. 22, 1937. A biographical note is to be found in the *Ency. Brit.*, vol. 13, p. 736. László was naturalized as an Englishman in 1914. Among his many honours were the M.V.O. in 1910, ennoblement by the Emperor of Austria in 1912, and, very shortly before his death, the very high Hungarian honour of the Order of Matthias Corvinus. In 1930 he was president of the Royal Society of British Artists. Among the later subjects of his art were the Duchess of Kent, Princess Elizabeth, and the Archbishop of Canterbury. In 1934 he published, with A. Lys Baldry, *Painting a Portrait.* László married, in 1900, Lucy Madeleine Guinness, and they had five sons.

LATIN AMERICA, or Hispanic America, is that portion of America which derives its culture and institutions from the Hispanic nations of the Old World, Spain and Portugal, embracing 20 republics and Puerto Rico; languages: Spanish; Portuguese, in Brazil; and French (officially), in Haiti. The area is approximately 8,050,000 sq.m. Population (est. 1937), 95 millions. The people are white, mestizo, and Indian, with negroid elements predominant in the Dominican republic and Haiti, and prominent in Brazil, Cuba, and on the Caribbean coast. The largest cities are: Buenos Aires, 2,388,645, third largest in America; Rio de Janeiro, 1,756,080; São Paulo, 1,167,862; and Mexico City, 1,028,068. The year 1937 saw in general an economic improvement, although the instability of the market for coffee, a major crop in most of the tropical countries, caused uneasiness. Politically, there were violent changes only in Bolivia and in Paraguay, although unrest existed in many of the countries. International relations were marked in general by a greater friendliness, except for the sharp clashes along the Dominican-Haitian boundary and the continuation of the Bolivia-Paraguay and Ecuador-Peru boundary controversies (*see* HAITI; CHACO; PERU). Foreign trade showed considerable development. Exports are, in the main, raw materials, especially tropical products, and wheat and meat products in Argentina and Uruguay, with petroleum an increasingly important item. (L. W. BE.)

LATTER DAY SAINTS: *see* MORMONS.

LATVIA (*Latvijas Republika*; Ger. *Lettland*), Baltic republic of north-central Europe, bounded N. by Estonia, S. by Lithuania and Poland, E. by Russia, member of the League of Nations. Capital, Riga (seaport; 385,063—1935). President, Dr. Karlis Ulmanis (1936;

premier, 1934). National flag, a white horizontal stripe on red.

Area and Population.—Area: 20,056sq.m. (plus 5,339, inland water), divided into Vidzeme (Livonia), Kurzeme (Courland), Zemgale, and Latgale. Population (1935): 1,950,502; religions: Protestant (56 per cent.), Roman Catholic (24·5), Greek and Orthodox (14·5); 77 per cent. are Letts, 12 per cent. Russians. Towns: Liepāja (Libau, seaport; 57,098) and two others above 30,000.

State-aided education figures: (1935–36), 1,907 elementary schools, with 223,483 scholars; 122 secondary, with 22,022. In the Latvian university, Riga, there were 7,225 students.

History, Trade, Finance, and Defence.—Theoretically, the sovereign power of the people is represented by the *Saeima* (100, elected for three years by universal suffrage and proportional representation), which, in turn, elects the President; but in 1934 the parliament was disbanded and power is concentrated in the cabinet. In June, Lord Plymouth visited Riga, and M. Munters, foreign minister, created a precedent in cordial relations with Soviet Russia by visiting Moscow.

Agriculture predominates, but though there is little mineral wealth, industrialization is advancing (metallurgical, textile, chemical, foodstuffs products). The chief exports are timber, butter, and flax. Imports (1936): 122 million lats (£4,880,000); exports: 138 million (£5,520,000); Britain takes three-fifths.

Currency unit: (silver) *Lat* (at par, 25·22 lats = £1). Budget (1936–37 estimate): 160 million lats. Notes (Bank of Latvia, fully covered): 43 million lats.

Army (conscript; term of service, 12–15 months): 2,200 officers, 23,000 others; 80 aeroplanes; navy: 2 submarines, 4 other craft.

BIBLIOGRAPHY.—R. O. G. Urch, *Latvia: Country and People* (Riga, 1935). (H. Fw.)

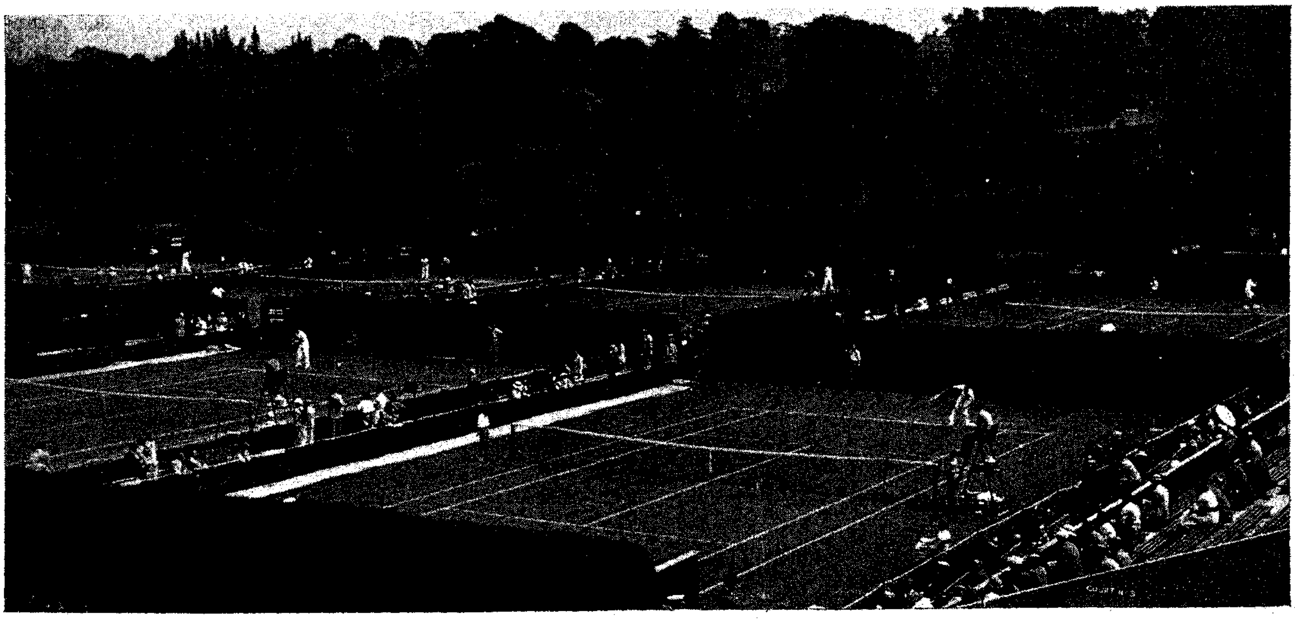
LAWN TENNIS. The lawn-tennis season of 1937 began on Jan. 6, when Ellsworth Vines, former American singles champion, met F. J. Perry of England, who had recently turned professional, at Madison Square Gardens, New York. The contest was remarkable for the mediocre and disappointing quality of play, and for the gallery, 17,630 persons, said to be the largest crowd ever to watch a game of tennis. The two players then left for a barnstorming tour of the United States, which lasted four months.

The first of the four great national championships was held on Jan. 27, at Sydney, New South Wales. Vivian B. McGrath, a 20-year-old Australian, became champion, defeating a newcomer to international play, John E. Bromwich, in five sets. With the veterans, Crawford and Quist, these players faced the United States Davis Cup team at Forest Hills, L.I., New York, on May 29, 30, and 31. Unfortunately, both Quist and McGrath were ill, and young Bromwich was unequal to the task of replacing them. Budge, Grant, and Mako took part for the American side, and won all five matches. Only a single set, taken by Bromwich from Budge, went to Australia.

The second national tournament of the year was the French championships, held in Paris from May 18 to 30. Tennis history was made when German stars won three of the five events. Von Cramm, the holder, refused to defend, but Henkel, his team-mate, proved an able substitute, defeating H. W. Austin of England in straight sets in the finals, and winning the doubles with von Cramm. The former Fräulein Krahwinkel, now married to a Dane, and playing as Fru Sperling, defeated Madame Mathieu of France in two sets for the women's title.

The English championships at Wimbledon took place from June 21 to July 3, and were notable for American triumphs. Budge won the men's singles with the loss of only one set, to his team-mate, Parker, in the semi-finals. In the finals he defeated von Cramm in three straight sets. The doubles resulted in a victory for Budge and Mako, who in the finals beat Hughes and Tuckey, of the English Davis Cup team, in four sets. England's only victory came in the women's singles, Miss Dorothy Round capturing the title she held in 1934.

The German Davis Cup team won the European zone finals, and came to Wimbledon on July 17 to face the United States. Von Cramm won the first two sets after deuce had been called in each, but Budge rallied to even the match. Von Cramm led four games to one in the deciding set, but Budge pulled up to five all and, after six match



Sport and General]

GENERAL VIEW OF THE MEN'S SINGLES IN PROGRESS AT WIMBLEDON, 1937 points, won the set, eight-six. The following week the victors challenged Great Britain for possession of the Davis Cup. Their victory was easy, for Hughes, the best English doubles player, was unable to compete, and Hare, the second singles man, was no match for either Parker or Budge. So for the first time since the French defeated the United States in 1927, the Americans were successful, and the Davis Cup returned to the United States.

The Wightman Cup matches, played annually between teams of women from the United States and Great Britain, were held at Forest Hills, L.I., New York, on Aug. 20 and 21, and resulted in a one-sided victory for the home players, six matches to one.

For the first time, however, an American title went to Germany, when von Cramm and Henkel defeated Budge and Mako in the doubles finals at the Longwood Cricket Club, Chestnut Hills, Mass., in straight sets. The fourth important singles tournament of the year was that of the United States at Forest Hills, New York, Sept. 2 to 11. It resulted in a win for Budge, who did not lose a set until the last round, when he defeated von Cramm in five sets, a match less close than the score indicated. A remarkable performance was the victory of Señorita Anita Lizana on her initial visit to the United States in the women's singles. She did not lose a set to a strong field, and for the first time an American title went to Chile.

LEAGUE OF NATIONS. Alexandretta.—In Dec. 1936 the Council dealt with the Turkish request, under Article 11, that the recognized rights of the Turkish populations of the Sanjak of Alexandretta (*q.v.*) should be guaranteed, in view of the approaching termination of the French mandate over Syria, by the conversion of the Sanjak into an independent State. It approved an interim agreement providing for the despatch of three neutral observers to the Sanjak and the initiation of conversations between France and Turkey. These resulted in agreement, and on Jan. 27, 1937, the Council approved the main lines of a compromise settlement submitted by its rapporteur (M. Sandler) in agreement with the two parties, who, at the Council's May session, announced their acceptance of the settlement, which entered into force on Nov. 29, 1937, as a final solution of the question.

Danzig.—At its session in January the Council also adopted the report of its Committee of Three requesting it to take note of the Polish representative's report on his endeavours to overcome the difficulties between the League high commissioner and the senate in Danzig. On Feb. 18, Prof. Carl Burckhardt, a Swiss national, (in succession to Mr. Sean Lester, who had been already appointed deputy secretary-general of the League) took up his appointment as high commissioner for a term of three years.

Spain.—On Dec. 12, 1936, the Council, at the request of the Spanish delegate, under Article 11 of the Covenant, considered the situation in Spain. It adopted a resolution recalling the duty of every State not to intervene in the internal affairs of another State, recommending the Non-intervention Committee to secure the effective fulfilment of the undertakings entered into, and authorizing the League's secretary-general to make available the technical organs of the League in regard to problems of a humanitarian character. A competent delegation of the Health Committee was despatched to Spain.

Shortly before the May session of the Council, the Spanish government requested that the situation in Spain should be placed on its agenda, on the ground that documents captured from foreign prisoners at Guadalajara confirmed the presence of regular Italian military units in Spain, which constituted veritable aggression.

On May 29 the Council adopted a resolution regretting the development of the situation, but noting the entry into force of the International Control Scheme on April 19/20 and the discussions of the Non-intervention Committee regarding the withdrawal of non-Spanish combatants, and condemning the bombing of open towns and the employment of methods of warfare contrary to international law. The Spanish situation was considered once more in September, when the Spanish delegates protested, both in the Council and in the Assembly, against the continuance of the non-intervention agreement, claiming that it denied to the legal government the right to obtain arms from abroad at a time when flagrant intervention in Spain and piracy in the Mediterranean were continuing on such a scale as to constitute aggression within the meaning of the Covenant. They also protested against the failure of the Nyon Conference to extend naval protection against pirates to vessels of the Spanish government. The Sixth Committee, to which the matter was referred, after long and difficult discussions, submitted a strong resolution to the Assembly referring to the presence of 'veritable foreign army corps fighting on Spanish soil', and declaring that unless foreign troops were withdrawn, League members would reconsider their decision to continue the non-intervention policy. This resolution was supported by 32 States in the Assembly, but failed, under the unanimity rule, to secure adoption, owing to the adverse votes of Portugal and Albania. Fourteen States (mostly South American) abstained. Finally, the Council adopted a resolution condemning piracy in the Mediterranean, and noting that the measures adopted at the Nyon Conference had proved effective.

Sino-Japanese Conflict.—On Sept. 12 the Chinese government appealed to the League, invoking Articles 10, 11, and 17. This appeal was referred to the Far Eastern Advisory Committee set up in 1933 to follow the situation after the Manchurian conflict. China, Australia, Germany, and Japan were invited to participate; the two latter refused. The United States was represented by an observer. On Sept. 29 the Assembly adopted a resolution, submitted by the Committee, condemning the bombing by Japanese aircraft of open towns in China. The Committee's reports were adopted by the Assembly on Oct. 6. The conclusion of the first was that Japanese action could not be justified on any grounds; the second recommended that efforts should be made to restore peace by agreement, and that the League should invite States-members, signatories of the Washington Nine-Power Treaty of 1922, to initiate the 'full and frank communication' provided for by that Treaty. The Assembly also adopted a resolution expressing moral support for China, and recommending members not to take any action calculated to weaken China's power of resistance and also to consider how far they could individually extend aid to China. The session of the Assembly was adjourned, not closed. Although on Oct. 6 invitations were issued to States-members signatories of the Nine-Power Treaty, it was decided that, in the hope of securing Japanese participation, the Conference should not be held under League auspices; it opened in Brussels on Nov. 3. (*See* NINE-POWER CONFERENCE.)

Raw Materials.—The 18th Assembly endorsed the conclusions of the report of the Raw Materials Committee, set up by the 17th Assembly, that while access was not seriously restricted, the ability of certain States to find the means to purchase raw materials was severely limited; the Committee suggested as a solution that every effort should be made to restore international exchanges on the widest basis. In December the Economic Committee drew up a report with a view to giving effect to these suggestions.

International Trade.—It recommended that raw materials should not be subject to any export prohibition or restriction except in pursuance of an international scheme; that they should not be subject to export duties, except those imposed at a uniform rate for revenue purposes; that foreigners should have the same facilities as nationals for developing natural resources everywhere; and that consuming interests should participate in the administration of international regulation schemes, which should provide them with adequate supplies.

The Assembly also adopted the Economic Committee's report which noted the favourable effects of the tripartite monetary agreement of Sept. 1936, and approved the suggestion that the existing system of quotas and exchange control should be relaxed and speedily abolished. It also requested the Economic and Financial Committees to pursue the study of the practical measures to increase international trade and facilitate the removal of exchange control, and to co-ordinate, in collaboration with the I.L.O. the examination of the following problems: improvement of the standard of living; the prevention of slumps; agricultural credit and insurance; factors affecting monetary systems; State and municipal indebtedness; fiscal evasion. It was decided to set on foot a study of demographic problems.

Nutrition.—The mixed committee of agricultural, economic, and health experts submitted its final report to the 18th Assembly. Its general conclusions were that food habits in Western communities had been tending to change in the right direction, and increased demand had benefited agriculture. It examined the influence of price on consumption and the effect of improved production methods, commercial policy, and distribution costs on price. Malnutrition it found remained a serious threat to health. The Assembly, in adopting the report, emphasized the close relationship between nutrition and national income, and urged those governments which had not yet done so, to set up national committees on nutrition.

Opium.—The Assembly drew attention to the deterioration of the position in the Far East, and appealed to Japan to put an end to the clandestine manufacture of and illicit traffic in opium and drugs carried on by Japanese subjects in China. It attached great importance to the preparatory work, discussed by the Opium Advisory Committee in 1937, for a conference on the limitation of the cultivation of the opium poppy and of the production of raw opium to be held in 1940.

Traffic in Women.—In February a Conference of Central Authorities in Far Eastern countries discussed at Bandung measures taken in the East to deal with the traffic in women and children. The Assembly requested the Council to take the necessary steps to carry out the Conference's recommendations for the establishment of a Bureau of the League in the Far East to receive and circulate information and co-ordinate action on this subject.

Rural Hygiene.—In August an Inter-Governmental Conference on Rural Hygiene in Far Eastern countries met at Bandung, and discussed the improvement of health and medical services, rural sanitation, nutrition, and measures for combating certain diseases in rural districts.

(For further details of League activities, *see* also MANDATES; REFUGEES; DRUGS AND DRUG TRAFFIC.)

League Budget.—The 18th Assembly adopted the Budget for 1938, amounting to 22,682,000 gold francs. The closed accounts for 1936 showed a net cash surplus of 5,592,101 gold francs. Current contributions from members to the 1936 Budget represented 91·75 per cent. as against 88·25 per cent. in 1935.

Composition of the Council.—The League Council (1936–37) was composed of: United Kingdom, France, Italy, the U.S.S.R. (Permanent Members); Chile, Spain, Turkey (1934), Ecuador, Poland, Rumania (1935), Bolivia, New Zealand, Sweden, China, Latvia (1936) (Members for three years). At the 18th Assembly, on Sept. 20, Spain and Turkey failed to secure a vote for re-election, and Iran and Peru were elected; and on Sept. 28 Belgium was elected to the Council.

Changes in Membership.—On Feb. 19 Paraguay finally withdrew from the League; on August 11 El Salvador, and on December 11 Italy gave the necessary two year's notice of withdrawal. Egypt entered the League at an Extraordinary Session of the Assembly on May 26, 1937.

BIBLIOGRAPHY.—Report of the Secretary-General, 1936–37; League of Nations Monthly Summary; League of Nations Official Journal. (S. A. HE.)

LEATHER. In seeking better definitions of quality and predictions of serviceability, leather technologists throughout the world are depicting clearer relationships between chemical composition, physical state, and fibre structure of leather and its strength, water resistance, wear, and comfort. A novel 'walking research', started in England, will include study of foot temperature while walking. Machine tests in America indicate that there may be 100 per cent. wear-variation in sole leather from even the best part of the hide.

The search continues for bookbinding, upholstery, belting and bag leathers resistant to rot from acids absorbed from the air. Leathers entirely or partly chrome tanned are more permanent than vegetable tanned leathers. Longer lasting leathers can be obtained by the addition of sodium chloride, lactate, or citrate, which serve as protective agents. In England, protected leathers may be stamped accordingly.

Shortage of staple supplies has stimulated development of other sources of hides and skins. Russia is intensively studying the variety of leathers that might be made from domestic hogskins. Japan and Germany have enlarged facilities for collecting and tanning sharkskins. A German method is claimed for making new leathers for gloves, shoe uppers, and upholstery from skins of codfish, catfish, salmon, and blue-fish.

The new process for curing hides and skins with salt-saturated absorbent paper has been found to require the addition of an antiseptic. The mixing of zinc oxide or peroxide with salt has been proposed as highly effective for curing hides and skins.

Owing to continuous spread of the industry since the World War, the 1937 world production of leather was about 25 per cent. more than in pre-war years. Except for the depression years, international trade has been well maintained because of increased consumption. The estimated production for 1937 of staple hides and tanned skins was (in thousands):

	United States	Germany	France	United Kingdom	World
Cattle skins .	22,675	9,817	7,248	11,413	104,874
Calf and kip-skins .	12,840	13,006	7,512	7,617	74,166
Goat and kid-skins .	49,179	8,313	7,341	13,005	83,557
Sheep and lambskins	38,316	10,411	11,417	8,012	80,913

The leading export countries in 1936 were: Belgium, £6 million (approx.); Germany, £4½ millions (approx.); the United Kingdom, £3½ millions (approx.); United States, £3¼ millions (approx.); France, £1¼ millions (approx.).

LEBANON: *see* Syria and Lebanon.

LEEWARD ISLANDS, a loosely federated British West Indian colony, with local autonomy in its several units (Antigua, St. Kitts-Nevis, Dominica, Montserrat, and thirty-two of the Virgin islands); capital, St. John (Antigua); governor: Sir Gordon J. Lethem. The area is 680sq.m. Population (official estimate, 1936), 139,694, with about 98 per cent. negroes and mulattoes. The language is English. The chief cities are: St. John (10,000), Hoseau (Dominica) (8,000), Basseterre (St. Kitts) (8,000). The government is administered by a governor and council. The new constitution for the colony, approved in 1936, went into effect in 1937. On April 6, 1937, it was officially announced that preparations were being made to transfer administration of Dominica from the Leeward Islands to the Windward Islands. There is an air service from Antigua, and there are shipping services from other ports. Imports (£656,985 in 1936), principally foodstuffs and manufactured articles, are chiefly from the British Empire, Great Britain providing 42 per cent., Canada 20 per cent., and the United States 16 per cent.). Exports (£629,200 in 1936), of which sugar comprises 70 per cent., are over 90 per cent. to the British Empire (Great Britain, 52 per cent.; Canada, 32 per cent.). The principal product is sugar, with some cotton, and tropical fruits. The monetary unit is the pound sterling.

(L. W. Be.)

LEGISLATION. For the most notable pieces of legislation enacted in Great Britain during 1937, *see* Public Statutes of the United Kingdom; Divorce; Regency Act; etc. For industrial and labour legislation in Great Britain and the United States, *see* Legislation, Industrial below. For legislation enacted in the United States, *see* Federal Legislation; State Legislation. *See* also International Law; and under headings of individual countries.

LEGISLATION, INDUSTRIAL. In Great Britain the great industrial law of 1937 was the Factories Act, which received the Royal Assent on July 30, and was the most important legislation of its kind since 1901. The Act will control in detail the condition in which all factory work in Britain is done, and, for women and young persons, the maximum number of hours they may work on any day or in any week, and the maximum number of hours overtime in excess of the standard they may work in any year.

The Act controls the lighting of factories, their ventilation and temperature. There are approximately 167,000 factories and 73,000 workshops on the registers of the Home Office. The new Act, which comes into force in July 1938, abolishes the distinction between factories and workshops, and between textile and non-textile factories, and brings within its scope certain classes of premises hitherto excluded, including men's workshops to which overcrowding restrictions have hitherto not applied. The factory inspectorate is to be considerably increased because of the complexity and scope of the new Act. It was in the committee stage of the bill that it was decided that, after July 1, 1939, the weekly hours to be worked by young persons under 16 should be reduced to 44, but the Home Secretary has power to increase the hours to 48 if an industry can show that it will be seriously prejudiced if the labour of the under-sixteens were to be thus limited.

The earliest hour at which work for women and young persons may start was changed from 6 a.m. to 7 a.m., and for young persons under 16 the latest finishing hour was changed from 8 p.m. to 6 p.m.; normal working hours for women and young persons becomes 48 a week against 60 (55½ in textile factories); there is a daily limit of 9 working hours against 10½ (10 in textile factories); and there must be no work after 1 p.m. on Saturdays. Employment beyond 48 hours a week is not permitted for young persons under 16, but overtime employment for women and young persons above 16 is permitted up to 100 hours in a calendar year; for women only the 100 hours may be increased to 150 in industries liable to seasonal or other pressure.

After the coming into force of the Act, a young person on being taken into employment, must be certified as fit for employment. The amount of space to be allowed for every person employed in a work-room is increased from 250 to 400cu. ft. This requirement will not apply immediately to existing workrooms, and under certain conditions exemption may continue for five or ten years. In rooms in which sedentary work of a light nature is carried on, a temperature of not less than 60° F. must be maintained after the first hour. An important section of the Act deals with safety provisions; the training and supervision of young people working at dangerous machines, stronger fencing around transmission machinery and for hoists and lifts, and the requirements for fire escapes have been extended.

The Act is really a codification of principles to which the regulations will give a form that can, if necessary, be varied to meet any modification of industrial processes or conditions.

United States.—Important as 1937 was in the enactment of new labour legislation, the year was still more significant for decisions of the highest court upholding existing labour laws. These court opinions upon minimum wage, collective bargaining, prison labour, and old age and unemployment insurance, not only determined decisively the validity of legal intervention which had long been held in question, but also by their liberality opened the way for further extensions of State and national protection. The new labour laws of this year therefore acquire additional interest and significance.

Among the many important labour laws enacted during 1937, the most notable relate to labour relations, minimum wages, hours, child labour, industrial health and safety, social insurance, and labour law administration. Labour relations Acts patterned after the Federal law and outlawing specified unfair labour practices, with State boards for enforcement, were adopted in Massachusetts, New York, Pennsylvania, Utah, and Wisconsin. Mediation and conciliation laws were strengthened in New York, Connecticut, Pennsylvania, South Carolina, and Wisconsin. Elimination of abuses involved in the use of industrial police, deputized sheriffs, strike breakers, or detective agencies was sought in laws enacted by Illinois, Massachusetts, Pennsylvania, and Utah. Pennsylvania and

Wyoming further restricted labour injunctions. Massachusetts, Tennessee, and Vermont enacted laws against 'sit-down' strikes. Utah required all labour organizations to register with the State industrial commission.

Minimum wage laws were enacted for the first time by Nevada, Oklahoma and Pennsylvania; and Arizona and New York re-enacted such laws following the Supreme Court's favourable decision on the Washington law. The Nevada Act is a flat-rate law, and the Oklahoma law covers both men and women. Strengthening amendments to minimum wage laws were adopted in Colorado, Connecticut, Minnesota, and Wisconsin. By the end of 1937, minimum wage laws existed in 22 States and the District of Columbia.

In hours legislation, Pennsylvania led by enacting an 8-hour day, 44-hour week, covering men as well as women and children, with certain exemptions. North Carolina fixed a 10-hour day, 55-hour week, for men, and a 9-hour day, 48-hour week, for women and minors. Washington limited to 60 the hours of domestic employees. An 8-hour day, 48-hour week limit was fixed for women in Connecticut (mercantile), Ohio (45-hour week in manufacturing), Illinois, and Nevada. Hour limits for women were also lowered in New Hampshire, North Carolina, and Vermont, and extended in coverage in Arkansas, New York, and North Dakota. Night-work for women was prohibited in Wyoming. The coverage of one-day-of-rest-in-seven laws was broadened in Illinois, New York, and Pennsylvania.

The child labour amendment to the Federal Constitution was ratified in 1937 by Kansas, Kentucky, Nevada, and New Mexico. The Kentucky ratification, however, was invalidated by that State's highest court in October. In all, 27 States (not including Kentucky) had ratified this amendment by the end of 1937. Missouri, New York, and Vermont prohibited the sale of child labour products from other States. The minimum age limit for child labour was raised to 16 in North and South Carolina. Pennsylvania raised the compulsory school attendance age to 17 years beginning in 1938 and 18 years in 1939. Wisconsin fixed an 8-hour day and 40-hour week limit for minors from 16 to 18 years of age, and also declared newsboys to be employees of the publisher or news agency. Power to exclude minors from hazardous employment was delegated to labour departments in Connecticut and North Carolina. Arkansas and Colorado adopted laws governing apprenticeship, and Congress provided for the promotion of apprenticeship standard through the Federal Labor Department.

Modern restrictive industrial homework laws were adopted in Massachusetts and Pennsylvania, and such work was also regulated by laws adopted in Illinois and Texas. More effective regulation of fee-charging employment agencies was sought in laws enacted in Arizona, Maryland, Pennsylvania, and Texas. Improved industrial safety and sanitation laws were enacted and rule-making powers delegated to the State labour department in Arkansas, Florida, and West Virginia. In 11 States, mine safety laws were strengthened or extended in coverage; and in Arkansas and Pennsylvania laws on the appointment of mine inspectors were revised. Boiler codes were adopted or amended in five States; a compressed-air safety code was enacted in Washington, and an elevator safety code in Michigan.

Workmen's accident compensation laws were amended in five States—Delaware, Indiana, Michigan, Pennsylvania, and Washington—to protect occupational disease victims. In Indiana, such coverage was made all-inclusive, but on an elective basis; in the other four States, it was limited to specified diseases. There are now 27 American laws providing compensation for occupational diseases—14 with all-inclusive and 13 with 'limited-list' coverage.

Many other liberalizing changes were made in the workmen's compensation laws of a total of about 35 States. Benefit scales were raised in New Mexico and South Carolina; the weekly maximum was increased in Georgia, New Hampshire, New Mexico, and Pennsylvania; and the weekly minimum was liberalized in Connecticut, Florida, Mexico, Ohio, Pennsylvania, and Vermont. The time limit on payments for total disability and to widows was abolished in Pennsylvania, and the total amount payable was increased in Georgia and Maryland. Waiting periods were shortened in Florida and South Carolina. Medical benefits were increased in a half-dozen States. Florida provided for double compensation to minors injured while illegally employed. Indiana and Maine created commissions to study the desirability of a State insurance fund. Pennsylvania made the cost of workmen's compensation administration a charge on insurance carriers and employers.

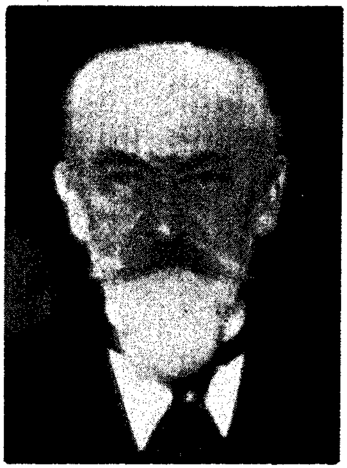
With the adoption of new unemployment compensation laws in 12 States and the Territories of Alaska and Hawaii, this legislation has now been extended to all of the States and Territories. The new State enactments in 1937 were in Arkansas, Delaware, Florida, Georgia, Illinois, Kansas, Missouri, Montana, Nebraska, Nevada, North Dakota, and Wyoming. In addition, about 30 other States strengthened existing laws by amendments. Validity of State and Federal unemployment compensation legislation was sustained by the Supreme Court in two sweeping decisions in May. Wisconsin completed its first year of benefit payments in July, and 22 additional States prepared to begin payments early in 1938.

Old age pension or assistance laws were adopted for the first time in seven States in 1937—Georgia, Kansas, New Mexico, North Carolina, South Carolina, South Dakota, and Tennessee. This left only Virginia without such a law. About 25 States amended their existing laws to conform with the Federal Social Security Act's provisions, to liberalize pension payments, or to strengthen administrative procedure. By Aug. 1937, nearly 1,500,000 persons were receiving such assistance under the laws of 47 States, and of the District of Columbia, Alaska, and Hawaii.

A revised plan for contributory old age retirement annuities for railway workers was adopted by Congress, following an adverse court ruling on the tax features of the 1936 legislation. The national old age insurance or benefit system set up in the Federal Social Security Act was launched by the beginning of tax collections for this purpose, in January. This provision of the Act was held constitutional by the Supreme Court in May. Massachusetts enacted a law to discourage the use of maximum age limits in industry, and New York created a commission to study the problem of the older worker.

Although in most States administration has been placed in existing State departments, new departments for the administration of unemployment compensation or other social security legislation were created in Arizona, Delaware, Missouri, Montana, Washington, and Wyoming. Labour relations or mediation boards were provided in Massachusetts, New York, Pennsylvania, and Wisconsin. State labour departments were extensively reorganized in Arkansas, Georgia and Indiana, and significant changes were also made by law in the labour departments of Florida, Michigan, Pennsylvania, South Carolina, and

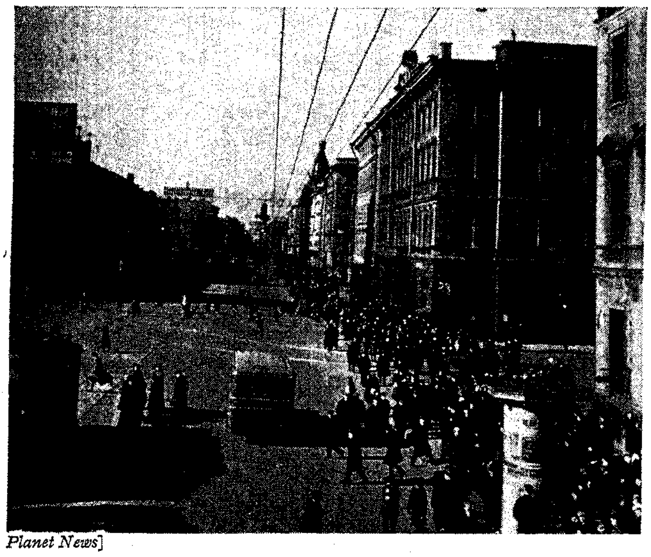
Tennessee. In Congress legislation for the reorganization of government departments was postponed by the senate until the 1938 session.


Sport and General]
DR. LEGOUIS

LEGOUIS, ÉMILE, D. ès Lettres, French literary critic; born at Honfleur, Oct. 31, 1861; died Oct. 16, 1937. A short biographical notice appears in the *Ency. Brit.*, vol. 13, p. 880. He held the professorship of English at the Sorbonne from 1904 till 1932. In Dec. 1932 the past and present professors of English at the British and Irish universities signed and presented to Legouis an address of admiration and gratitude for his outstanding services as interpreter of English literature to the British, hardly less than to the French, public. In 1926 he published an English translation of his *Histoire de la littérature anglaise*, and in 1934 *A Short History of English Literature.* His last completed work was a translation of *The Winter's Tale* into French blank verse.

LEHMANN, ERNST AUGUST, German aeronaut; born in Ludwigshafen, March 12, 1886; died May 7, 1937, from injuries received when the airship *Hindenburg* burst into flames at Lakehurst, New Jersey. Capt. Lehmann was trained in naval construction, and, later joining Dr. Eckener in the Deutsche Luftfahrts A.G., in 1913 took command of the rigid airship *Sachsen.* He was a successful Zeppelin commander during the War. In 1924 he crossed to America in the *ZR*3, and remained in the United States for three years, working with the Zeppelin Airship Building Company in Akron. Later he was commander, or second-in-command to Dr. Eckener, in the *Graf Zeppelin*, and commanded the *Hindenburg* on her first cruise to Lakehurst, New Jersey, in May 1936. He was aboard this ship on her last and fatal voyage in the capacity of technical adviser.

LEMIEUX, Hon. RODOLPHE, Canadian statesman; born at Montreal, Nov. 1, 1866; died Sept. 28, 1937. He was educated at Nicolet and Laval University, and graduated in law, becoming a K.C. in 1897. He was solicitor-general of Canada 1904–6; postmaster-general 1906–11; minister of marine 1911; Speaker of the Canadian House of Commons, 1922–30. In 1930 he became a member of the Canadian Senate. He married Berthe Jetté in 1894.


Planet News]
AVENUE OF OCTOBER 25, FORMERLY NEVSKI PROSPECT, LENINGRAD

LENINGRAD. The second city in the U.S.S.R.; population (1935) 2,739,800. Founded by Peter the Great in 1703 as St. Petersburg, it was the capital of Russia until 1918. It is now the centre of the Leningrad Province (which is divided into two parts by the Karelian A.S.S.R.), is an important industrial centre with over a half-million factory hands, and holds first place in the machine-building industry in the Union. It also has shipbuilding, metal-working, chemical, electro-technical, textile, clothing, food, and printing industries. Its importance as a port (especially for timber export) has been enhanced by the newly built canals (White Sea–Baltic Canal, 1933, and Moscow–Volga Canal, 1937).

Industrial plants apart, its cultural amenities give Leningrad a most important position in the Soviet Union. In 1936, it possessed 65 museums, 56 libraries, 39 theatres, 53 cinemas, 58 higher educational institutions, 40 rabfaks, 102 technical colleges, and 180 research institutes.

A description of the city may be found in the *Ency Brit.*, vol. 13, pp. 914–16. (S. Yak.)

LEOPOLD III (1901–), King of the Belgians, succeeded his father, Albert I, on Feb. 17, 1934; married, Nov. 4, 1926, Princess Astrid of Sweden, who died, as the result of a motor accident in Switzerland, Aug. 29, 1935. King Leopold was educated at Eton, where he was a fellow-pupil with the Duke of Gloucester, and served in the field towards the end of the World War. He visited London twice during 1937—privately in March, when he discussed his country's foreign policy with British ministers, and officially in November. During the former visit he was made Colonel-in-Chief of the 5th Royal Inniskilling Dragoon Guards, an honorary colonelcy which his father had held before him. In February King Leopold was visited in Brussels by the King of Sweden. On July 21 he wrote to his premier, M. Van Zeeland (*q.v.*), suggesting that an independent permanent and universal organization of economic studies be formed to assist in the solution of world problems, and at his London visit in November, in a speech made at the Guildhall in reply to an address of welcome, he again manifested his preoccupation with the world's economic difficulties.

LEPROSY. Investigations of the geographical distribution of leprosy and of the degree to which it prevails in peoples of varied social customs, food habits, and concepts of it, have been extended in 1937, and have included countries and localities in Africa, South America, and Oceania. Surveys in Nigeria led to an estimate of the presence of 200,000 cases, or about one per cent. of the population. In Colombia the incidence remains entirely unknown.

The Nigerian leaders regard patients with paralyses, contractures, and mutilations which are sequelae of more active processes, as those among whom restrictive measures should be practised, and they are relatively uninterested in those stages of the disease in which it is probably more readily communicable. In Colombia the asylum and care afforded the leprous by governmental institutions are surreptitiously shared by the non-leprous. These concepts may be contrasted with the mandatory segregation of all recognized cases in Australia and portions of the United States of America.

Juvenile leprosy has been subjected to further study because of its importance in the determination of local sources of infection, the minimal periods which occur between the probable invasion of the body by the virus and the development of the disease in a clinical form, and the evolution of the disease after the initial infection. Re-examinations of children in Ceylon examined two and four years previously contributed further to the observation that the infection of children before the age of puberty may remain latent for years, or may become spontaneously arrested and leave few or no residual effects.

The frequency of occurrence of ' leprides ' among patients in China, India, Japan, and Africa has interested students who are endeavouring to classify these lesions of the skin by clinical and histological criteria, and to determine their genesis and significance in the type and course of the disease with especial reference to their relation to the resistance or immunity of the patient, and the effect of environment upon their development. Their resemblance to lesions occurring in the skin of tuberculous individuals, and the apparent absence or scarcity of specific bacteria demonstrable by modern technique may be regarded as their distinguishing characteristics.

These lesions, and other analogies with infections of man and the lower animals by bacteria which resemble that of leprosy in morphology and staining characteristics, have renewed comparative histological and clinical researches into tuberculosis, rat-leprosy, para-leprosy of cattle, lepra bubalorum (buffaloes), and nodular subcutaneous tuberculosis of cattle. Likewise, comparisons are being made with lupus erythematosus, sarcoid, von Recklinghausen's disease, and other conditions in which the cellular or architectural changes of the tissues are analogous to those occurring in leprosy.

Modern bacteriological methods which have been applied in the study of tuberculosis are being tried in efforts both to cultivate the bacterium of leprosy in laboratories and to determine the identity or causal relation of the numerous strains of bacteria which have been isolated from leprous materials. Biochemical procedures are being applied to the isolation and reactions of the proteins of these various organisms ; and the products obtained by these chemical extractions are being introduced into the skin of leprous patients to learn whether they produce swelling and redness at the site of injection, such as that which occurs in tuberculosis patients when tuberculin or other extracts of the tubercle bacillus are injected. Similar extracts are also being investigated for the purpose of making a diagnosis of leprosy in early stages previous to the development of frank clinical evidence, and to determine whether the disease processes have become inactive.

Diagnosis by serological tests made with reagents derived from bacteria resembling that of leprosy has been reported as successful, but this has not yet been adequately confirmed by other investigators. Additional serological tests and reactions are being developed for diagnostic purposes, and those previously made are receiving further study. The observation that the blood serum of many patients who have leprosy in advanced stage, but who do not have syphilis, will react with positive results in serological tests for syphilis has had further corroboration.

Emphasis is again directed to the education of the people with regard to the communicability of the disease, as a means of preventing its dissemination among them when conditions are favourable to its development. However, segregation of the sick in institutions by governmental mandate is regarded by some as ineffective, and its discontinuance as a preventive measure is the subject of active discussion. The rôle of poor economic status, and the attendant inadequate food and insanitary social practices are again brought forward as handicaps to preventive and therapeutic efforts.

Specific therapy has received further consideration, but has been characterized for the most part by modifications of methods and drugs previously used. (N. E. W.)

LEWIS, JOHN LLEWELLYN (1880–), United States labour leader, was born in Lucas, Ia., Feb. 12, 1880. It was as president of the United Mine Workers that he finally assumed a dominant place in American life as leader of a movement for industrial unionism which challenges the craft union organization of the long dominant American Federation of Labor. When the Federation expelled the unions and their members affiliated with Lewis's Committee for Industrial Organization in July 1936, a labour dispute was precipitated which continued throughout 1937. During 1937 Lewis concentrated his effort upon expanding the membership of the Committee for Industrial Organization in order to increase its influence. Realizing that factional disputes were handicapping the American labour movement, Lewis and President Green of the American Federation of Labor endeavoured in the last months of the year to secure some arrangement which would permit co-operation. The year closed without such an understanding being reached, but there was no doubt that the Committee for Industrial Organization constituted an economic and political force of significant proportions. (*See* also AMERICAN FEDERATION OF LABOR ; and COMMITTEE FOR INDUSTRIAL ORGANIZATION.)

LIBERAL PARTY, THE. At the General Election of Nov. 1935 the Liberal Party seemed to have reached its nadir as an independent political force. In a House of Commons of 615 members, only 54 had been returned as Liberals, and of these 33 were followers of the government, returned with Conservative support. The remaining 21 formed a Liberal opposition under Sir Archibald Sinclair : their former leader, Sir Herbert Samuel, had lost his seat at the election, and was subsequently raised to the peerage at King George VI's coronation. Undismayed by misfortune, both sections of the Party set to work by midsummer, 1936, to consolidate their position. The Liberals of the opposition section overhauled their machinery and established a Liberal Party Organization, with an annual Assembly (which met for the first time at Buxton in May 1937) and an executive Council ; area and constituency associations being simultaneously strengthened. The Liberal National Council was created as a controlling body of the section which, under Sir John Simon, co-operates with the Conservatives ; a central office was opened, and branches were started in a number of constituencies. Relations between the two sections remain strained. Sir John Simon's followers contend that they leaven the government with liberal principles, and that in any case national unity, especially against the spread of Socialism and Communism, continues to be more important than subservience to old Liberal dogmas. The followers of Sir Archibald Sinclair, on the other hand, consider that their former colleagues must ultimately merge into the Conservatives ; that the crisis which called for a united front has passed ; and that the government has mishandled foreign affairs and is courting catastrophe by its devotion to tariffs.

By-elections in 1937 showed an appreciable turn-over of votes in favour of opposition Liberal candidates, without any actual gain of seats. In the constituencies, except in

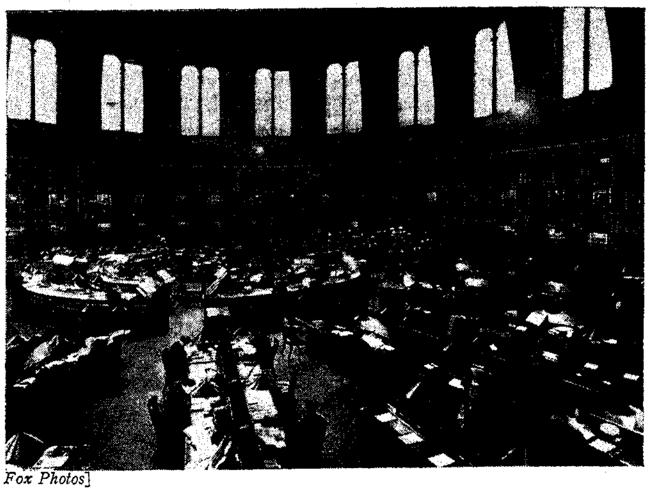
London, there was a general revival of activity, in which the women took a prominent part, and towards the end of the year fresh interest was aroused by the rise in prices. This, argued orthodox Liberals, was the inevitable result of the government's protectionist policy, and the sole remedy both for rising costs and for unemployment was the freeing of the channels of world trade. Besides demanding, therefore, better support for the League of Nations, a juster distribution of wealth, and an electoral system which will be fair to all parties, the programme of the opposition Liberals lays special stress on the general lowering of tariff walls, as a step towards allaying much of the prevailing international friction and as a potent influence for peace. (ME.)

LIBERIA, an independent negro republic on the west coast of Africa, bounded N.W. by Sierra Leone and in the hinterland and E. by French West Africa. Area, *c.* 44,000sq.m. ; pop., from 1½ to 2 millions. The president (since 1931) is the Hon. Edwin Barclay, his term of office expiring in 1943 ; he is assisted by a cabinet, and there is a parliament of two chambers, both elected. The official language is English, and the national flag horizontal stripes of alternate red (6) and white (5) with, in the upper flagstaff corner, a white star on blue ground.

Liberia's principal products are palm-kernels and oil, pessciva, coffee, cocoa, ivory, kola-nuts, and rubber, for the latter of which the American company, Firestone Plantations, has a concession in return for its development of the capital. There are no railways, and the making of roads fit for motor traffic is in its infancy, and that only in the coastal areas. Shipping entering Liberian ports during 1934 amounted to little over 1,300,000 tons, of which nearly 502,000 tons were British. Exports and imports to the United Kingdom and the U.S.A. were, respectively: Exports, £7,545 and $505,339; imports, £86,634 and $534,639.

In 1927 a loan of $5,000,000, of which half has been issued, was raised in the United States, but in 1931, largely on account of forced labour, bad sanitation, and backward conditions generally, the U.S. refused to recognize the new president. Liberia then applied to the League of Nations for financial and administrative assistance, but, after long negotiations, the government refused the League's proposals which, in May 1934, were formally withdrawn. In June 1935, Liberia's plans for economic and social rehabilitation now being found to be acceptable, the United States granted recognition to President Barclay and his government.

LIBRARIES. Epoch-making developments have been, and still are, going on in British libraries, in the form of new buildings, large extensions, and modernization of equipment. At the British Museum, reconstructive work has already resulted in what is practically a new North Library, now available to those consulting MSS., incunabula, and similar precious material. Hard by, the great tower of the University of London is all but finished, occupied chiefly by a colossal book-stack and three magnificent reading-halls. Half the stock of more than 300,000 books has now been transferred there from South Kensington. Reconstruction at the Bodleian has given readers a renovated Arts End. Similar progress is going on at Cambridge. The new Brotherton Library at Leeds, the new Arts Library at Manchester, and the building going up at Liverpool, are great acquisitions for what may be termed the provincial Universities. The stately building for the National Library of Wales was opened in July, and the plans have been approved for the National Library of Scotland. On the Continent, the League of Nations Library is the nearest parallel, though extensive alterations are contemplated or in progress in a number of places.



Fox Photos]

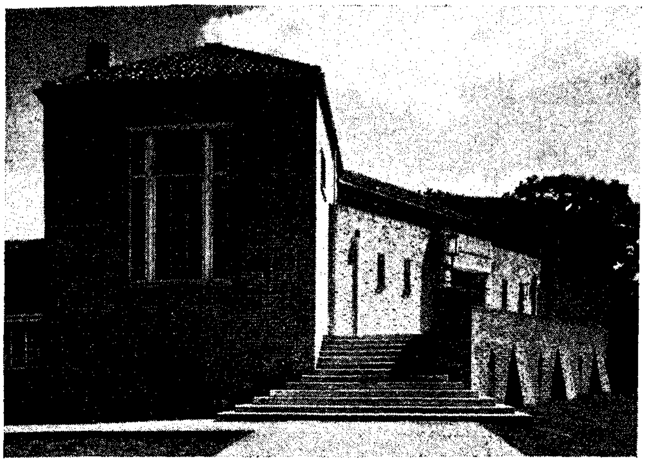
READING ROOM, BRITISH MUSEUM, LONDON

The most recently available particulars regarding some of the leading British and European libraries are as follows :

British Libraries.—*British Museum*, 4,450,000 books, 200,000 MSS. *Patent Office*, 282,000 vols. *Admiralty*, 100,000. *War Office*, 130,000. *Board of Education*, 80,000. *House of Commons*, 80,000. *House of Lords*, 55,000. *Foreign Office*, 75,000. *Board of Trade*, 56,000. *India Office*, 200,000, and 20,000 MSS. *National Art Library*, 200,000, and 250,000 photos, etc. *Natural History Museum*, 200,000. *Science Museum*, 250,000, including 113,000 periodicals. *London University*, 310,000, including the Goldsmiths' library of economic literature, 60,000. Note also the libraries of University College, 365,000, King's, 86,000, London School of Economics, 750,000, and the Institute of Historical Research, 48,000. The law libraries of the *Inns of Court*, 60,000 ; *Lincoln's Inn*, 70,000 ; *Inner Temple*, 85,000 ; *Middle Temple*, 70,000. *The Royal Society*, 120,000. *Athenæum*, 80,000. *National Liberal Club*, 35,000, and 40,000 pamphlets. *Royal Institution*, 65,000. The *London Library*, 450,000, is the foremost subscription library. Among the most important public libraries is the *Guildhall*, 122,000, and 20,500 MSS. Among the special libraries may be mentioned those of the *Royal Society of Medicine*, 150,000 ; *Royal College of Surgeons*, 80,000 ; *Society of Antiquaries*, 100,000 ; *Warburg Institute*, 85,000, and 45,000 photos ; *Royal Asiatic Society*, 45,000, and 1,500 MSS. ; *Linnean Society*, 55,000 ; *Geological Society*, 55,000 ; *Zoological Society*, 35,000 ; *Chemical Society*, 40,000 ; *Royal Empire Society*, 250,000. (*See* R. A. Rye, *Libraries of London*, 1910 ; *Minerva*, 1937 ; *Libraries, Museums, and Art Galleries*, 1937.)

At Oxford, the *Bodleian Library* has over 1,500,000 books and 40,000 MSS., and the *Taylorian* 120,000 vols. The chief libraries at Cambridge are the *University Library*, with about 1,500,000 books, 10,000 MSS., and 200,000 maps, and *Trinity College*, with 120,000 books and 1,600 MSS. The *Mitchell Library*, Glasgow, has 200,000 vols. The *John Rylands Library*, Manchester, containing the Althorp collection of early printed books, has 115,000.

The National Central Library co-ordinates the Public Library services in England and Wales, with a Scottish and an Irish Central Library for those regions. It makes accessible to readers in any place some 21 million books, and also has an international service.



Architecture Illustrated]

THE NEW PUBLIC LIBRARY AT SANDERSTEAD, SURREY. (ARCHITECTS: GOLD AND ALDRIDGE)

European Libraries.—The *Bibliothèque Nationale*, Paris, has 4 million printed books, 500,000 MSS., and 20,000 periodicals. Other French libraries include the *Bibliothèque de l'Arsenal*, 1,000,000, and 12,500 MSS.; *Bibliothèque Mazarine*, 350,000, and 48,000 MSS.; *Bibliothèque Ste.-Geneviève*, 700,000, and 4,000 MSS., and 20,000 prints; the library of the *Senate*, 250,000, and 1,300 MSS.; the *University*, 900,000, with 1,590 MSS. and 130,000 theses; *l'École normale supérieure*, 450,000; *Musée d'Histoire naturelle*, 350,000, with 2,130 MSS. and 30,000 other items; *l'Institut*, 700,000; *Bibliothèque historique de la Ville de Paris*, 300,000, with 2,000 MSS. and 19,000 maps. The wealth of the French provincial libraries, and of the capital and provincial libraries of Germany, Italy, Belgium, and the majority of the other European countries, may be judged when it is said that the number of such libraries comparable to, or even richer than, many of those already mentioned is too great to be included in this brief survey. (E. A. Ba.)

It is encouraging to note, from the incomplete statistics available, that appropriations in the United States for tax-supported libraries have been increased in the past two years, that many libraries have been able to restore salaries cut during the depression, and that in a few instances salaries have been increased. The situation of libraries deriving their income wholly or in part from invested funds is less encouraging.

An event of great potential significance for library development in the United States of America was the establishment of a library service division in the United States Office of Education, of which Ralph M. Dunbar was appointed (Nov. 26, 1937) chief. Specialists in public and school libraries have also been appointed. On Jan. 5, 1937, the 50th anniversary of the establishment of the first training school for librarians was commemorated. In 1887, Melvil Dewey, then librarian of Columbia College, opened a school of library economy. Removed to Albany in 1889 as the New York State Library school when Dewey became director of the State library, the school remained there until 1926, when it was transferred to Columbia university and merged with the library school of the New York Public Library (est. 1911) to form the present School of Library Service. The 1936–37 report of the Board of Education for librarianship (American Library Association) lists 26 schools of various types accredited by the board as meeting its standards; all are connected with teaching institutions. On Nov. 1, 1936, the total enrolment was 1,345, and the number of graduates for 1936–37 was 900.

The Rundel Memorial building of the Rochester (N.Y.) Public Library was opened Oct. 5, 1936. It is similar in plan to the Enoch Pratt Library, Baltimore, Md. The cost was approximately $1,300,000, of which $1,000,000 came from the bequest of Morton W. Rundel. The Library of Congress annex, for which roughly $8,225,000 have been appropriated, is rapidly nearing completion, and should be ready for occupancy in the latter part of 1938. Although mainly for book storage, with an estimated capacity of 10 million volumes, the annex will also provide much-needed work and study space. The city of New York, late in 1937, authorized funds of $2 millions for the construction of the new Brooklyn Central Library, utilizing the present foundations of the uncompleted wing that was begun over 20 years ago. The new quarters for the general library of the University of Pittsburgh were opened in May, 1936, on the fourth, fifth, and sixth floors of the 'cathedral of learning'. A new library, costing $230,000, was opened at the Agnes Scott College, Decatur, Ga., in the autumn of 1936. In Oct. 1937, new buildings were dedicated at the University of Oregon, Eugene; at Denison university, Granville, O.; at Brooklyn (N.Y.) college; and at the Rhode Island State college, Kingston.

Many libraries in the Ohio valley were damaged by the severe floods of 1937. Kentucky, estimated damage of $300,000, and Indiana, $64,000, were the States most seriously affected. The Louisville (Ky.) Public Library placed the damage to buildings, books, and equipment at $200,000.

BIBLIOGRAPHY.—For further information about American libraries consult: *Bulletin* of the American Library Association; *Library Journal*, New York; *Library Quarterly*, Chicago. Important contributions to library literature were: W. M. Randall and F. L. D. Goodrich, *Principles of College Library Administration* (Chicago, 1936); M. L. Raney, ed., *Microphotography for Libraries* (Chicago, 1936 and 1937).

LIBRARY ASSOCIATION. The Library Association, founded 1877 as the Library Association of the United Kingdom, incorporated by royal charter 1898, is the representative body for libraries and librarians throughout the British Commonwealth of Nations. Its objects are, to unite all interested by holding conferences for the discussion of bibliographical and kindred questions, to promote the better administration of libraries, to promote the status and qualifications of librarians, to watch and contribute to library legislation, and to hold examinations in librarianship. Its headquarters are at Chaucer House, London, and it has a number of branches, such as the Northern Ireland and the Scottish Library Associations, and special sections such as that dealing with university and research libraries. Total membership, 5,350. Its professional register comprises 845 Fellows and 734 Associates. About one-fourth of the members hold university qualifications, these being chiefly from the State, university, and other learned libraries. The annual conference is held during a week in June, at various centres, and meetings for papers and discussion take place in the winter months. Professional examinations have been held annually since 1896, and certificates awarded. The association was instrumental in the establishment of the University of London School of Librarianship in 1919. *The Library Association Record* is the official organ, that for 1937 being the 39th volume. Among many invaluable textbooks and tools, it publishes *The*

Subject Index to Periodicals annually, and *Reference Books*, a classified guide, with supplements. There is an information bureau at Chaucer House. *See* also *The Library Association Year-Book*, 1929 continued. (E. A. Ba.)

The official organization of librarians in the United States and Canada known as the American Library Association, consists of librarians, library trustees, and others interested in libraries. Founded in 1876, it functions through a headquarters staff of over 65 persons and through 75 voluntary boards and committees. International in character from its beginning, the association had representatives from every major country in its 1937 membership, which numbered over 14,000.

One of the chief objectives of the association is complete and adequate library coverage for the United States and Canada. In 1937, approximately 50 million people in the two countries—most of them in rural areas—were without access to a public library. Standards of training for librarians are set by the association, and a free employment service is offered to libraries and individual librarians. The total income for the past fiscal year was more than $312,000, but less than $100,000 of it was unrestricted. The association's endowment is now approximately $2,194,000. The association issues three periodicals: *Bulletin of the American Library Association*, a monthly which includes the annual reports, the conference proceedings, and the yearly handbook; the *Booklist*, published semi-monthly as a guide to the selection and purchase of current books; and the *Subscription Books Bulletin*, a quarterly which presents critical estimates of subscription books and sets sold currently by canvassing agents. In addition, the association published over 40 other professional books and pamphlets during the year.

The 59th annual conference of the A.L.A., held in New York City, June 21–26, 1937, was attended by over 5,500 persons, the largest attendance in its history.

The 1937 midwinter conference was held in Chicago, Dec. 27–30, and the 60th annual conference will be held in Kansas City, Missouri, June 13–18, 1938.

LIBYA, a large but mainly desert Italian colony in N. Africa, bounded N. by the Mediterranean, W. by Tunis and Algeria, S. by the French and the Anglo-Egyptian Sudan, and E. by Egypt. Divided into the four provinces of Tripoli, Misurata, Bengazi, and Derna, with a military territory in the south, the estimated area is about 400,000 sq.m. (excluding a partially surveyed hinterland of over 200,000sq.m.), with a population (1931) of 728,000, of whom about 45,000 were Italians.

The governor, Marshal Balbo, succeeded Marshal Badoglio in 1933; his functions are administrative only, the legislative power being reserved to Rome, and the Italian courts having final jurisdiction. Italian and Arabic are the official languages; Arabic is generally spoken, and the natives are mainly Mohammedan. The chief towns (others being mere caravan centres) are the ports of Tripoli (pop. 95,000), in the W., Homs (31,000), Misurata (43,000), and Bengazi (44,000); the latter port is in course of reconstruction at a cost of 12,000,000 lire.

History.—A decree of Jan. 1937 ordering Jewish shopkeepers to open their shops on Saturdays and close them on Sundays was widely resisted and led to much persecution of the Jews; in March Mussolini paid an official visit to the country, where he opened the 1,200m. coast-road connecting the Egyptian and Tunisian frontiers, reviewed the Italian navy, which was concentrated at Tripoli, and proclaimed himself 'Protector of Islam.' On April 10, from Rome, Mussolini announced a new constitution under which Libya was to be an independent military and naval unit of Italy's African Empire, Libyan agriculture was to be subsidized, 24,000,000 lire were to be spent on housing in the African colonies generally, and the Moslem community was to have further privileges. In Sept. and Oct. the garrison was reinforced by over 1,200 men.

Trade and Communications.—Agriculture and stock-raising (sheep, goats, cattle, camels) are the chief industries, and on the coast sponge- and tunny-fishing are prosperous. Cereals, with the olive, vine, mulberry, and other fruits are grown in the steppe country, the oases produce dates, oranges, etc., in plenty, and tobaccogrowing and manufacture is now a flourishing industry. Imports in 1935 were valued at 398,154,000 lire, and exports at 61,161,000. The budget estimates for 1935–36 were: revenue (including State contribution 291,800,000 lire), 420,704,000 lire; expenditure balanced at that figure. The official currency is the Italian, but English and French money are also used

Libya has about 270m. of railway, an extensive system of caravan tracks and, including the new coast-road, about 4,000m. of road fit for motoring. Telephone communication is good; and there is a daily air-service between Tripoli and Rome.

LIECHTENSTEIN, independent State, Europe, N.E. of Switzerland (customs and postal alliance). Capital, Vaduz. Ruler, Prince Francis I (born 1853; succeeded 1929); administrator, Dr. Joseph Hoop (1928); Diet (15). Area, 65sq.m.; population, 10,213 (nine-tenths Catholics), mainly agricultural (cattle). Products: corn, wine, fruit, wood, marble. Currency, Swiss franc.

LIFE INSURANCE. In Great Britain, the year 1937 proved to be a satisfactory one. Life insurance companies will probably have placed on the books about £428 millions as compared with £408 millions in 1936. The insurance in force at the end of the year for British companies is estimated to exceed £3,400 millions. At the beginning of 1937, the total assets of all of the life insurance companies domiciled in the United Kingdom amounted to almost £1,250 millions. The premium income during the year 1936 (the last year for which such figures are available) amounted to over £150 millions, while the total income for that year, including investment income, equalled £205 millions. The year witnessed an increase in group life insurance and annuity plans, in spite of increases in annuity rates during recent years. The average rate of interest has been decreasing in recent years, but it is of interest to note that it is in excess of that earned by American companies in the last year or two. The mortality rate in England also continues to be favourable.

Since a policy-holder in Great Britain is entitled to an income-tax rebate on premiums on a policy providing insurance on his own life or that of his wife up to a maximum limit of one-sixth of his income, the insuring public is encouraged to purchase high premium policies. It may be noted that 75 per cent. of the new business is under endowment insurances against approximately one-half of that proportion in the United States and Canada.

A significant event of the past year is the withdrawal from the Irish Free State of several British companies with respect to their life business. This is principally due to a law compelling companies doing a combined life, fire, and casualty business to confine themselves either to life insurance only or to other lines of coverage.

In the United States and Canada life insurance companies continued their progress towards recovery. The estimated new business for 1937 of $16,000 millions is still short of the $21,000 millions for each of the years 1929 and 1930. The total amount of life insurance in force at the end of the year was expected to reach $115,000 millions or more than $2,000 millions in excess of the highest on record during 1930. Since 1930, assets have increased from approximately $20,000 millions to $28,000 millions. The premium income of $3,850 millions for 1937 will be greater by more than $100 millions than during 1930. The income from all sources during 1937 will amount to $5,700 millions. These are necessarily estimates. The mortality experience of the year was favourable.

The problem of investment continued to present a serious difficulty and the funds of life insurance companies invested in United States government bonds have increased more than tenfold during the past five years. The low rate of interest and the recession in the security market occurring during the last weeks of 1937, affecting non-amortisable securities, is expected to decrease the amount of contingency reserves and surpluses of many companies. Large sums of money were received by life insurance companies for annuities and single premium policies, and there was an increase in the amount of insurance moneys left with the companies under settlement agreements after the death of the insured or on maturity of the policy.

The decision of the United States Supreme Court declaring the Social Security Act constitutional has encouraged those not covered by that Act to consider providing pensions for old age, while those who are covered may realize the need of supplementing future government payments through insurance companies. In Canada, the decision of the Supreme Court declaring the social legislation under dominion auspices unconstitutional was upheld by the British Privy Council on appeal.

A legal case of importance was decided by the New York Court of Appeals, the highest tribunal in the State, in which the court approved the practice of an insurance company taking into account its disability experience in apportioning dividends under life insurance policies with disability benefits. An important action was taken by industrial life insurance companies in liberalizing their policies, the chief change being the granting of non-forfeiture values for policies which lapsed after the payment of premiums for six months instead of three years as heretofore. (A. HU.)

LINEN: *see* FLAX AND LINEN.

LINGUISTICS is the science and philosophy of language. The study of the nature of language as such should proceed from these fundamentals: (1) A language is a system for making any signal required; (2) a signal is an action intended to have an effect on a mind by virtue of that mind's understanding the intention; (3) a sentence is a signal constructed in accordance with a language.

Language-philosophy is hampered by two persistent fallacies: (1) That language is necessarily speech; (2) that language is the instrument of thought.

That these two opinions should frequently be held by the same person is not stranger than either of the separate dogmas. To say that a sign-language can be called 'language' only by metaphor is an example of the well-known etymological fallacy. That language is the instrument of thought can be easily refuted *a priori* and *a posteriori*. The elements of a proposition such as 'He is writing a letter' are simultaneous in the mind. The mental operation cannot be effected by a sentence, in which the elements are successional. The anacolutha frequently committed by excellent thinkers could hardly represent the thought of an idiot; if the words have already been used in framing the thought, how is it possible they can become so deranged when they are repeated immediately afterwards aloud, or immediately written down? Many other arguments, for which there is no space, conclusively demonstrate the grotesque absurdity of this view. The hindrance to thought afforded by the failure of primitive languages to classify must be illusory. The having entirely different words for 'wash the body', 'wash a weapon', 'wash a dish' does not prevent the primitive from fetching water from the same stream for all three.

The latest achievement of comparative philology is linguistic geography, which is producing maps of dialectal usage, giving the interesting results that usage, in words, pronunciation, and other features of language, frequently follows ancient highways such as rivers; and extends from town to town, passing over the intervening country.

Phonetic research proceeds with undiminished enterprise. The pronunciation of not less than forty languages has been scientifically investigated and recorded, including such diverse types as Chinese and Eskimo. Not only the word-tones of such languages as Chinese and Sechuana, but the sentence-intonations of some European languages have been recorded. Unfortunately, the reading-matter given in illustration is in many cases rendered valueless by being of the literary type that not one learner in a hundred will ever have to pronounce.

The interest of linguisticians extends not only to the nature of language, but to various matters concerned largely with the teaching of foreign languages; which involves the study—for example or warning—of the circumstances and behaviour of the young child acquiring the language of its environment.

In connexion with the problem of correct speech, a questionnaire was posted in America to linguisticians, teachers, authors, business-men, and editors. Unfortunately, the categories that were suggested: (1) acceptable for literature, (2) acceptable for cultured conversation, (3) acceptable for technical language, (4) illiterate, suggest that what is acceptable for the literary style is *a fortiori* acceptable in conversation: nothing could be more erroneous.

Although grammar-teaching has improved in a negative sense, and most grammarians realize the folly of giving rules that do not represent the usage of any class of speakers or writers, the positive fruits of this reform are not yet being reaped. We no longer forbid a preposition at the end of a sentence, but it has not yet been noticed that there are cases where no English speaker puts the preposition at the end: We say 'What with?' but not 'Which hammer with?', yet we do say 'Which hammer did you do it with?'

Dictionaries still pride themselves on collection, instead of selection, including 'giantry' and 'jujube-tree' and 'methinks', while omitting 'my watch is gaining', and 'what relation is he to you?' But a happy sign is a new dictionary with a definition vocabulary restricted to 1,500 words, a step towards eliminating *obscurum per obscurius*, as 'sea-umbrella, a pennatulaceous polyp', 'Kartoffel, eine Nachtschattenart'.

Work has begun on frequency-counts of words and phrases. Unfortunately the counts are from books: extreme frequency in book-language may go with extreme rarity in conversation, as with 'for' meaning 'because'. Another danger is that reliance on word-frequency lists in preparing reading-matter tends to make compilers neglect conversational phraseology. With these caveats, the frequency-counts must be called a great advance.

Research has been carried out on bilingualism, the general result appearing to be that bilingualism, though not necessarily a handicap, is found to contribute nothing to general intelligence.

Successful efforts have been made to increase, by systematic methods, speed in silent reading, so necessary for purely informative reading.

Subjects awaiting research are: (1) Spelling-reform, in regard to which the old objection about the difficulty of reading previous literature is raising its head again; (2) Shorthand: a convenient, easily-learned system for scholars and others who have no need of verbatim-reporting speeds; (3) A well-thought-out theory of translation, based on the principle that a perfect translation gives the explicit and implicit meaning of the original, with all the evocative effects, and on the rejection of the literal, whether in the sense of syntactically parallel or of giving a word its usual rendering instead of the rendering required in the passage under consideration: the ideal being that of a clever boy who lost marks for translating *equitatu hostes instantes impediit* perfectly, as 'He utilized his cavalry in rearguard actions'.

Bibliograhpy.—Jespersen, *Language*; Ogden and Richards, *Meaning of Meaning*; J. R. Firth, *Speech*; L. R. Palmer, *Introduction to Modern Linguistics*; H. E. Palmer, *Principles of Language Study*; West, *New Method English Dictionary*. (H. O. Co.)

LINLITHGOW, Rt. Hon. VICTOR ALEXANDER JOHN HOPE, 2nd Marquess of, K.T., G.M.S.I., G.M.I.E. (1887–), Viceroy of India, was educated at Eton. He succeeded to the Marquessate in 1908, from 1922 to 1924 he was Civil Lord of the Admiralty, and was chairman of the Royal Commission on Indian Agriculture, 1926–28, and of the Joint Select Committee on Indian Constitutional Reform in 1933, succeeding Lord Willingdon as viceroy in April 1936. In Jan. 1937, he made a tour in Burma of some duration. Later in the year, he delivered an important message to British India, dealing with the intentions of the Home government on constitutional matters. The native Press called for a meeting between Lord Linlithgow and Gandhi, whom the viceroy, by a gesture interpreted as one of goodwill towards the Congress Party, invited to visit him at Delhi. The meeting took place in August (*see* Gandhi). In October the viceroy held a magnificent durbar in Lahore, when, on his golden throne, he received tokens of homage from all over the Punjab, though the absence of Congress members was deplored. Lord Linlithgow was warmly welcomed in Bikanir in October, when he attended the celebrations in connexion with the golden jubilee of the Maharajah. In November he headed an appeal for greater philanthropic support of medical research activities in India, especially in connexion with tuberculosis and maternal mortality.

LIPPE-BIESTERFELD, PRINCE OF: *see* Juliana, H.R.H. Princess.

LIQUOR: *see* Spirits.

LIQUOR LEGISLATION. In Great Britain, apart from customs and excise changes made by the Finance Acts, the only liquor legislation of recent years has been the Licensing (Permitted Hours) Act of 1934, under which licensing justices, if satisfied that the special requirements of a district render it desirable, may allow licensed houses in that district to be open for 8½ instead of 8 hours per day during some specified period; and the Methylated Spirits (Scotland) Act of 1937, controlling the sale of methylated spirits in Scotland, this having been largely used in the concoction of the highly deleterious drink, 'Red Biddy'.

Liquor control in the United States remains, since the repeal of national prohibition, in an experimental stage. By the end of 1937 only Georgia and Tennessee remained dry; local option extended during the year, dry areas increasing in 15 and decreasing in 8 States; temperance instruction in schools was required in 20 States; and 18 States imposed new liquor taxes of increased rates.

At a national conference, held in July, a desire was apparent for interstate and intergovernmental co-operation and larger use of licensed State stores. The growth of retaliatory taxes and discriminating legislation between the States is an evil which may require federal attention.

The Federal Alcohol Administration has been reorganized as an independent establishment co-operating with the alcohol unit of the bureau of internal revenue of the Treasury department. Basic permits are required for all interstate and foreign commerce in liquors. Re-sale is restricted, and permits are conditional upon compliance with the requirements of the 21st Amendment and all federal laws. (*See* also Spirits.)

LITERARY PRIZES. The Nobel Prize for Literature, 1937 (*c.* £8,000), was awarded to Roger Martin du Gard, French novelist. The chief prizes awarded in Great Britain, France, and the United States were the following:

Great Britain.—Newdigate Prize: Miss Margaret Stanley-Wrench, *The Man in the Moon.* James Tait Black Memorial (about £250 in each class): biography, Edward Sackville-West, *A Flame in Sunlight*; novel (posthumous award), Winifred Holtby, *South Riding.* Carnegie Medal (children's literature): Arthur Ransome, *Pigeon Post.* Gregory Medal (Irish Academy of Letters): William Butler Yeats. Harmsworth (£100): Margaret O'Leary, *The House I Made.* Hawthornden (£100): Ruth Pitter, *A Trophy of Arms.* Heinemann (£40): Elvire Pelissier, *Jeux de Vilains.* King's Gold Medal (poetry): Wystan Hugh Auden. Schoolmasters' (£1,000, Hodder & Stoughton): Norah K. Smith, *A Stranger and a Sojourner.* Sunday Times Gold Medals: George M. Trevelyan, *Grey of Fallodon*; Robert Byron, *Road to Oxiana*; Robert Lynd, *I Tremble to Think*; Margaret Irwin, *The Stranger Prince.*

French.—Femina (frs.5,000): Raymonde Vincent, *Campagne.* Femina Americaine: Naomi L. Babson, *The Yankee Bodleys.* Femina Anglaise (£40): Margaret Lane, *Faith, Hope, No Charity.* Goncourt (frs.5,000): Charles Plisnier, *Marriages*, and *Faux Passeports.* Interallié: Romain Roussel, *La Vallée sans Printemps.*

United States.—Academy of American Poems ($5,000): Edwin Markham. American Historical Association, George Louis Beer Prize ($240): Charles Wesley Porter, *The Career of Theophile Declassé.* Jean Jules Jusserand Medal: Samuel E. Morison, *Tercentennial History of Harvard.* Justin Winsor Prize: Carl Bridenbaugh, *Cities in the Wilderness.* Julia Ellsworth Ford Contest for Children's Literature. First prize ($2,000); Benson Wheeler and Claire Lee Purdy, *My Brother was Mozart.* Harper Prize Novel: Frederic Prokosch, *Seven Who Fled.* Houghton Mifflin Literary Fellowships ($1,000 in addition to royalties and advances): Dorothy Baker and David Cornel De Jong. National Institute of Arts and Letters, Gold Medal: Charles McLean Andrews. New England Poetry Society Prize: John Hall Wheelock, *Poems*, 1911–36. John Newbery Medal (most distinguished children's book): Ruth Sawyer, *Roller*

Skates. O'Henry Memorial Awards (best short stories): first prize ($300), Stephen Vincent Benet, *The Devil and Daniel Webster*; second prize ($200), Elick Moll, *To Those Who Wait*; third prize ($100), Robert M. Coates, *The Fury.* Pulitzer Prizes ($1,000 in each class): novel, Margaret Mitchell, *Gone with the Wind*; play, Moss Hart and George S. Kaufman, *You Can't Take it with You*; history, Van Wyck Brooks, *The Flowering of New England*; biography, Allan Nevine, *Hamilton Fish*; poetry, Robert Frost, *A Further Range.* Theodore Roosevelt Memorial Award ($2,500, Doubleday, Doran): Dean Alfange, *The Supreme Court and the National Will.* Edwin Wolf Novel Prize ($2,500, Jewish Publication Society of America): Beatrice Bisno, *To-morrow's Bread.*

Canadian.—Lorne Pierce Medal (Royal Society of Canada): Stephen Leacock.

LITERARY RESEARCH. The most important discovery of 1937 was that of 18 lines of an ode by Sappho, found by Signora Norsa inscribed on a piece of pottery, of the second century B.C., which was disclosed by Signor Breccia, an Italian excavator in Egypt. It constitutes the earliest document extant by Sappho, and apparently was written while she was in Crete.

Elderkin published in *Hesperia* two maledictory inscriptions of the third century A.D., found by the American excavators of the Agora at Athens.

Two interesting maps were found at the Bodleian library: de Gourmont's map of Champagne, 1546, and Mollineux's map of the world, on what is now called Mercator's projection. Only four other copies of the latter exist.

Seventy new poems by Franco Sachetti were published from the Lateran collection by Alberto Chiari, in his *Il Libro delle Rime di Franco Sachetti.*

Prof. Abbott brought out a catalogue of Lord Clinton's extremely important papers, found six years ago at Fettercairn House, concerning Johnson, Boswell, and Sir William Forbes. Hitherto unknown letters by Horace Walpole and by Lord Chesterfield have been brought to light.

The main body of literary discoveries was, however, concerned with the nineteenth century. The letters of Fanny Brawne to Fanny Keats, shed considerable light on the life of Keats, and remove many misconceptions. Finney published a new sonnet of Keats, from Mr. Pierpoint Morgan's *Woodhouse Scrapbook,* and Dorothy Hewlett had a new fragment in her *Adonaïs, a life of John Keats.* Signora della Robbia also used new documents in her work on Shelley's *Emily.*

E. de Selincourt brought out new letters of William and Dorothy Wordsworth in *The Middle Years,* and Mr. Samuel Romilly discovered the large correspondence of Maria Edgeworth with Lady Romilly. A romantic find was made at Abbotsford of the letters, actually hidden in a secret drawer of a writing-table, of Scott to Charlotte Carpenter.

A number of valuable manuscript corrections in the text of Jane Austen's works were made public. Many new letters by Elizabeth Barrett Browning appeared in the sale of the papers of Lieut.-Col. Moulton-Barrett.

Peter Quennell published the correspondence between the Princess Lieven and Metternich from 1820 to 1826, and the letters of the Tsar Nicholas to the Empress Marie were brought out for the first time by Dr. Bing.

The sixth volume of the series *Correspondance générale de Marcel Proust* contains Proust's letters to Madame and Monsieur Emile Straus. (S. L. En.)

LITERATURE OF CENTRAL AND SOUTH-EASTERN EUROPE. Among the historical works from Austria of 1937 were Dr. Schuschnigg's *Dreimal Österreich,* and the first volume of Hugo Hautsch's *Geschichte Österreichs.* Biography included Victor Bibl's *Kaiser Franz, der letzte römisch-deutsche Kaiser,* and the biography of an orchestra in von Kralik's *Die Wiener Philharmoniker.* There were several volumes of essays, especially some by Stefan Zweig, namely, *Begegnungen mit Menschen, Städten, Büchern,* and others entitled *Nähe und Ferne,* by Lothar.

Two volumes of poetry should be mentioned: Riemerschmied's *Das verzauberte Jahr* and Ginzkey's *Sternengast.*

The following novels were outstanding: von Hammerstein's *Der Wald,* Jelusich's *Die Ritter,* Lucka's *Der Impresario,* the third volume of Musil's *Der Mann ohne Eigenschaften,* Rende's *Der Glasbläser,* and Werfel's *Höret die Stimme.*

Hungary.—Perhaps the most significant fact was the continuation of the sociographic movement originated by Illyés. The *Athenaeum* organized a sociographic series called the 'Discovery of Hungary,' of which two volumes have already appeared (Féja's *Viharsarok,* which was banned, and Erdei's *Futóhomok*).

Ivänyi-Grünwald contributed the fourth volume of the series on modern world history edited by Hóman-Szekfü-Kerényi. Schöpflin published a history of modern Hungarian literature. The national theatre celebrated the centenary of its foundation, and its history was published by the University Press, in Rédey's *A Nemzeti Szinház története.*

Bänffy's *És hijjával találtattál,* a continuation of his *Megszámláltattál,* dealing with pre-war Hungary, criticizes the aristocracy. Other Transylvanian writers to have published in 1937 were Nyirö, with novels entitled *Havasok Könyve* and *Jézusfaragó ember,* and Makkai, with *Magyarok Csillaga,* a novel about St. Stephen. Hungary's greatest novelist, Móricz, also brought out a novel, *Míg új a szerelem.*
(S. L. En.)

Czechoslovakia.—In lyrical poetry, O. Fischer's *Guest,* V. Nezval's *Absolute Sexton,* and Jan Zahradníček's *Greetings to the Sun* were outstanding. I. Olbracht wrote stories on Jews in Carpathian Russia, *Golet in the Valley,* and Karel Čapek published a novel on miners, *The First Shift.* M. Pujmanová's novel on post-war Czechoslovakia, *People at Crossroads,* E. Hostovský's picture of Jewish family life, *The House without Master,* and V. Neff's story from the Prague bourgeoisie, *Two at a table,* attracted much attention. Among plays K. Čapek's parable on dictators, *The White Plague,* is easily first. His brother, J. Čapek, published a volume of essays, *The Limping Pilgrim.* Literary criticism and history are strongly represented in 1937: F. X. Šalda's posthumous volume, *Studies in Literary History and Criticism,* A. Novák's *Spirit and Nation,* and O. Fischer's *Word and World* are outstanding. Zd. Nejedlý published the fifth volume of his monumental *Life of Masaryk.* The year will be memorable also for its losses: the historian J. Pekař, the critic F. X. Šalda, the literary historian V. Tille, and finally T. G. Masaryk, who influenced literature profoundly by his thought, all died in 1937. (R. W.)

Switzerland.—In French, C. F. Ramuz's very successful *Derborence,* which deals with a legend in the *Alpes vaudoises,* and his latest book, *Si le soleil ne revenait pas,* a novel about a Swiss valley with only a few hours of sunshine during the day, are of value. Guy de Pourtalès wrote an interesting book in *La pêche miraculeuse,* and G. Oltramare's *Don Juan ou la solitude* must be remembered. M. Sandoz's poems, *Souvenirs fantastiques et nouveaux souvenirs,* were important. René Morax's play, *La servante d'Evolène,* a legend of the Valais, won great success during the summer.

In German, Felix Moeschlin published an historical study, *Der schöne Fersen*, and another book, *Der Amerika-Johann*. Among recent novels are : T. Truoz-Saluz' *Soglio*, Esther Laudolt's *Das Opfer*, and Heer's *Thomas Platter*. (S. L. En.)

Yugoslavia.—In the Serbian language there were two important poetical publications : an anthology of post-war Serbo-Croatian verse, *Antologija srpsko-hrvatske posleratne lirike*, collected by Gavella, and Tín Ujević's collected poems, *Pesme*. The short stories of Ivo Andrić and Borivoje Jevtić were published in collected form. Village life was studied by Radic in *Selo* (Serbian life) and by Šubic in *Kaljuga* (Bosnian life). Two satirically humorous comedies were produced by the old dramatist, B. Nušic.

Two important young Croatian poets brought out volumes of verse : Delorko with *Rastužena Euterpa*, and Tadijanović with *Dani Djetinjstva*. The following novels may be singled out : I. Kozarčanin's *Sam čovjek*, F. Pavešić's *Podvoda*, A. Niemarević's *1914*, M. Moljevič's *Na Njivama*, F. Martinčić's *Zmijski Skot*, I. Dončević's *Propast* and I. Kozarčanin's *Tudja Žena*.

Two volumes of Slovene poetry may be indicated : Anton Seliškar's *Pesmi pričakovanja*, and Silvin Sardenko's *Materi*. Two plays were noteworthy : Bratko Kreft's *Velika puntarija* (in five acts) and Joze Krankec's *Direktor Campa*. Among the works of fiction were Miško Kranjec's *Prostor na soncu*, France Bevk's *Ubogi zlodej* and *Vmestu gorijo luči*, and J. Kozak's *Spiridon*. (X.)

Rumania.—The philosopher Lucian Blaga concluded his 'Trilogy of Culture' in *Geneza Metaforei si Sensul Culturii*. Poetry, which flourished in 1937, included Emil Bota's *Intunacatul April*, Tudor Arghezi's *Ce-ai cu mine vântule ?*, Aron Cotruș's three volumes, *Horia*, *Tară* and *Minierii*, and V. Voiculescu's *Urcus*. George Gregorian's poems, entitled *Lumini de seară*, won the poetry prize of the *Societatea Scriitorilor Români*. This society also awarded a prize to the novel by Dem. Theodorescu, entitled *Robul*, a violent satire of modern life. Alexandru Cantemireanu wrote an important novel dealing with the revolutionary period of 1848, in *Din vremea lui Căpitan Costache*. Mihail Sadoveanu, the popular novelist, produced *Cazul Eugeniței Costea* and *Povești vânătorești*, a collection of hunting stories. In his novel *Mane, Tekel, Fares*, Cezar Petrescu began a trilogy dealing with the peasant revolution of 1907.

Bulgaria.—Two volumes of poetry, Cyril Christov's *Waterbreak* and Blenica's *The White Bird*, should be mentioned. History and archaeology were enriched by V. Myacotin's *History of Russia from the IXth to the XVIIIth century*, P. Nicov's *The Second Bulgarian Kingdom, 1186–1936*, P. Dinecov's *Sofia in the XIXth Century*, I. Velcov's *The Excavations near Sadovets : Gothic Settlements in the Valley of Vit*, and D. Vassilev's *The Architectonic tradition in the Old Bulgarian Palaces at Plisca*. Among important novels, the following may be selected : K. Stoyanov's *Maria Magdalina*, V. Polyanov's *A Prince without a Crown*, G. Kaychev's *The Gentleman with the Girl*, C. Petcanov's *He comes from the Plain*, O. Vassilev's *Heroes do not feed their Mothers*, and F. Popova-Montafova's *The Daughter of Caloyan*. Finally, there are some volumes of short stories, by Yordan Yovcov (*If they could speak*), E. Pelin (*I-You-He*), C. Constantinov (*Third Class*), I. Volen (*God's Folks*), A. Caralyichev (*Near the Fire*), M. Vassilev (*Dust after the Herds*), and Chudomir (*Fellow-Countrymen of ours*). (S. L. En.)

Greece.—Chr. C. Christovassilis, the picturesque story-teller, and Paul Nirvanás, the great poet, critic, and essayist, died in 1937. Two volumes of poems by Petros Magnis appeared, entitled *Ladanies ki Ereikia* and *Archilokheia*, and L. Alexiou published *Resarta*, a sonnet sequence. Petros Vlastos' *Paravlastara* is a book of collected essays and philosophical studies, exceedingly valuable. The short story, a popular form, was represented by D. K. Nicolopoulos' *O Thanassakis*. The novels of Gr. Xenopoulos, which have excellent local colour, should not be overlooked. (X.)

LITERATURE OF NORTHERN EUROPE, THE.

For convenience, the literature of Poland has been included in this article, as well as that of the Scandinavian and Baltic countries, for the year 1937. It should be noted that translated literature figures prominently in many of these countries.

Norway.—Among the poets who must be mentioned are Hovden with *Dikt i utval*, Schøyen with *Viddenes folk*, Vogt with *Et liv i dikt*, Wildenvey with *Samlede dikt*, and Øverland with *Den røde front*. Published plays included Krog's *Opbrudd*, Tu's *Seinsumar*, Borgen's *Høit var du elsket*, Egge's *Manns ære*, Grieg's *Nederlaget*, and Bjerke's *Kjærlighetens legende*.

The *Norsk litteratur historie*, begun in 1924 by Bull, Paasche, and Winsnes, was completed in 1937 by the appearance of Volume V. There were many books of history, biography, criticism, and sociology. The *Norsk Kulturhistorie* and the first volume of *Det norske arbeiderpartis historie 1187–1937* should not be overlooked.

Amongst the numerous novels, the most vital were, perhaps, Elster's *Helg*, Hagen's *Refling*, *Den gamle pionêr*, Scott's *Ferdinand*, Sigrid Undset's *Norske helgener*, Anker's *Små avsløringer*, Braaten's *Fugleburet*, Fangen's *Allerede nu*, and Ring's *Leken blir liv*.

Sweden.—There was some rather striking poetry. Lagerkvist produced *Genius*, a visionary prophetic book. Gullberg's *Att Övervinna Världen* raised him to the front rank. Siwertz's *Minnas*, Berit Spong's *Dam med Parasoll*, K. G. Hildebrand's *Vardagsjämning*, and O. Lagercrantz's *Den Enda Sommaren* are all works of note. Successful memoirs included H. Hamman's *Minnen*, and V. Heiser's *En Amerikansk Lakares Odyssé*. A few travel and adventure books rose above the average, namely, C. Belfrage's *Bort Från Alltihop* and A. Engström's *Med Kaaparen Till Sydafrika*. Outstanding successes among novels were Gustaf-Janson's *Stora Famnen*, Hammenhög's *Anna Sevardt*, Hedberg's *Grop åt Andre*, and Swensson's very well written *Hjalmar Willen och hans Klass*.

Denmark.—Poetry suffered a great loss in the death of the poet Thøger Larsen, but several important collections appeared, in particular K. Andersen's *Lanterner*, Marie Bregendahl's *Filtret Høst*, and J. V. Jensen's *Paarskebadet*.

Noteworthy novels were K. Bjarnhoff's *Livets Elskere*, K. Blixen's *Den afrikanske Farm*, J. Buchholtz's *God lille By*, and A. Ehrencron-Kidde's *Den gode Hyrde*.

Historical works included Vilh. La Cour's *Danmarks Historie*, G. Hatt's *Landbrug i Danmarks Oldtid*, and Th. Thaulow's *Kong Christian X ug det danske Folk, 1912-1937*. The most important biographies were perhaps M. Nexø Andersen's *For Lud og Koldt Vand*, J. Kammergaard and N. Anesen's *Svømmeturen*, and J. E. Lang's study of *Henry George*.

Iceland.—Among the volumes of poetry were J. Úr Vör's *Ég Ber Að Dyrum*, J. Úr Kötlum's *Hrímhvíta Móðir*, and G. Frímann's *Störin Syngur*. Books of essays included G. Finnbogason's *Mannfagnaður*, and a collection of essays and short stories by various authors, entitled *Rauðir Pennar*. Amongst the novels were Laxness's *Ljós Heimsins*, two by K. Guðmundsson, *Uxinn Og Gyðjan* and *Lampinn*, and H. Halldóksson's *Hraun Og Malbik*.

Finland.—Finnish poetry included Jylhä's *Risti lumessa,* Kaijärvi's *Maanviini,* Kivimaa's *Vuorille ja muita runoja,* and Vaara's *Yön ja auringon Kehät.*

Among the many novels of the year were several family and psychological novels: Antilla's *Pyrn perhe,* Hämäläinen's *Tyhjä syli,* Nuolivaara's *Isäntä ja emäntä,* and Salminen's *Kolmen naisen talo.* The latter book, together with Santavuori's *Sen täytyi kerran tulla* and Waltari's *Vieras mies tuli taloon* were prize-winners.

Many books were also published in Swedish.

Estonia.—The oldest poet, K. E. Sööt, published on his 75th birthday a collection of new poems, all in tune with the latest developments of Estonian literature. But the most important volume of verse was Heiti Talvik's *Court Day.* About twenty important novels were published, including Enn Kippel's *When the Iron Head Came,* dealing with the period of the Tsar Peter and Charles XII of Sweden; and Jaan Kärner's *The Rising Nation,* a vivid presentation of Estonia's emergence as a State. H. Raudsep, the most popular dramatist, wrote *Flags in the Storm,* and *Man who holds the Trumps.*

Lithuania.—V. Mykolaitis-Putinas, author of the famous novel *Altorių-Šešely,* published *Krizė,* dealing with Lithuanian life during the recent economic crisis. Other novels were Ivošiškis' *Spudai,* V. Katilius' *Katastrofa,* and S. Kymontaitė-Čiurlionienė's *Šventmarės.* The most important collections of short stories were L. Dovydėnas' *Kortu Namelis,* J. Grušas' *Sunki Ranka,* K. Inčiura's *Obelys Žydi,* and St. Pikšris' *Ežerai Žydi.* Lyric poetry was represented by St. Anglickis' *Didžioji Kančia,* F. Kirša's *Maldos Ant Akmens,* and J. Kossu-Aleksandravičius' *Užgęsusios Chimeros Akys.*

Latvia.—*Lielas linijas,* a volume of poems by the famous Rainis, was discovered after his death. The poet Aspazija dedicated his *Kaisītās rozes* to the president of the republic, Dr. Ulmanis. Pludonis brought out two books of poetry, *Ko Palestinas palmas Şalc* and *Saulei pretī.* Among the many novels were three by J. Sārts, *Druvas san, Zaļa svētnīca,* and *Krusts debisīs*; J. Juşkevics' *Zobens pār Rīgu,* an historical novel, and *Zemes prieka,* a novel by the poet Rozitis. The short story was very popular, and the following collections should be remembered: *Satikşanās* and *Pēdējā tikşanās* by the poets P. Ermanis and P. Rozitis respectively, E. Adanson's *Smalkās Kaites,* A. Eglītis' *Lietā dzīve,* U. Delle's *Negantais nieks,* E. Prusas' *Sūneklī* and J Miesnieks' *Sirzu asinis.*

Poland.—The year's work included not only poetry and prose, but also important contributions to history, literature, criticism, and biography. Three or four of the women novelists published outstanding books in 1937, namely, Mme Kuncewiczowa with *Dzień Powszedni państwa kowalskich,* Mme Gojawiczyńska with *Rajskie jabłko* and *Dwoje ludzi,* Mme Kossak-Szczucka with *Bez oręża,* and Mme Dąbrowska with a collection of short stories, *Znaki Życia.*

Among the men novelists, the following are to be mentioned: Parandowski with *Niebo w płomieniach,* Morcinek (the Silesian) with *Pro Kamienistej drodze,* and A. Strug, who has recently died, with a notable tale of American life, *Mildyjar.*

The outstanding poetical publication of 1937 was by Łobodowski, who brought out two volumes of verse, *Demon nocy,* and *Rozmowa z ojczyzną.* A play by Nowaczyński, *Cezar i Człowiek* deserves remembrance.

The third volume of the Polish 'D.N.B.' was published in 1937. Several volumes of letters and memoirs also appeared: the letters of the nineteenth-century novelist Orzeszkowa, the letters of the philosopher Trentowski, and the memoirs (in three volumes) of the nineteenth-century patriot journalist T. T. Jez (pseudonym for Zygmunt Milkowski).

Wasiutynski's important Life of Copernicus aroused much controversy. Four volumes in the edition of the collected works of Norwid, vols. 3, 4, 8, and 9, appeared in 1937. The classical scholar Zieliński brought out a valuable study of the Roman Empire entitled *Cesarstwo Rzymskie.*

LITHUANIA (*Lietuva*; Ger. *Litauen*), Baltic republic of north-central Europe, N. of Poland, member of the League of Nations. Seat of government, Kaunas (Kovno; 105,370—1936). President (1932-9): Antanas Smetona. National flag, yellow, green and red horizontal stripes.

Areas (with population), including autonomous Klaipeda (Memel, seaport—38,079), but excluding Vilna (10,422sq.m.; 1,000,000; with like-named capital—207,750 in 1931—claimed by Lithuania) and Suwalki, in Polish occupation, 21,489sq.m.; (1936) 2,499,529 (four-fifths Roman Catholics; Memel is Protestant). Gardinas (Grodno; Polish) 61,600; two other towns exceed 20,000.

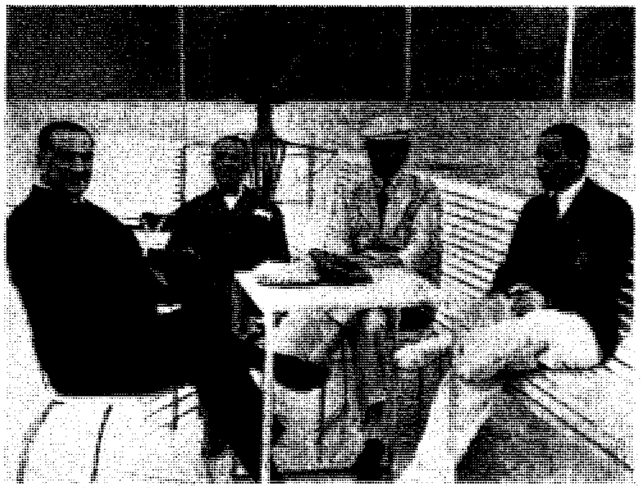
History, Trade, and Finance.—Theoretically the Diet (49, proportionately elected, 1936) wields sovereign power, but a dictatorship persists; premier, the president's nominee, Juozas Tubelis. Resentment at the Polish tenure of Vilna (*see Ency. Brit.*, vol. 14, pp. 215-16) remains active. Poland threateningly discountenanced a tentative Lithuanian-Soviet rapprochement.

Over three-quarters of the population produce butter, pigs, poultry, eggs, flax, and timber. Imports (1936): 156,060,500 litas (£5,202,000); exports: 190,485,000 (£6,348,000), Britain taking half.

Currency unit: (silver) *litas* (at par, 48·66 litas = £1 = $4·87). Budget (1937 estimate): 298,895,256 litas. Notes (Bank of Lithuania; fully covered) and gold (1937): 186,240,000 litas.

Bibliography.—H. F. Chambon, *Le Lithuanie Moderne* (Paris, 1934). (H. Fu.)

LITTLE ENTENTE, a political organization binding together the States of Czechoslovakia, Rumania, and Yugoslavia. Created immediately after the World War as an alliance against common dangers threatening these three States (Habsburg restoration, Hungarian revisionism), for which purposes, and those of general co-operation, periodical meetings were held between the three Foreign Ministers,



Wide World Photos]

THE CONFERENCE OF THE LITTLE ENTENTE REPRESENTATIVES. LEFT TO RIGHT: M. STOYADINOVICH (YUGOSLAVIA), M. ANTONESCU (RUMANIA), DR. HODŽA (CZECHOSLOVAKIA), AND M. TATARESCU (RUMANIA) it was developed in 1929 by the conclusion of a General Act of conciliation, arbitration, and judicial settlement between the three countries; and on Feb. 16, 1933, by the adoption of a statute which set up a Permanent Council, meeting at least three times a year, with an Economic Council, a permanent secretariat, and any other bodies considered desirable. Through these organs, the three States were to act as a single unit in foreign policy, on the basis of the Covenant of the League of Nations, the Kellogg Pact, the General Act, etc.

In 1937, regular meetings were held. Yugoslavia's agreements with Bulgaria and Italy were noted with satisfaction. The Little Entente affirmed its friendship with Rome, its adherence to the principles of the League, and its refusal to enter ideological blocs. A more conciliatory attitude was adopted towards Hungary, with whom negotiations were carried on in the autumn (*see* HUNGARY). A Military Advisory Council was set up in Prague (April 28).

Thus solidarity was preserved; at the same time, the structure of the alliance was undeniably strained by Germany's attacks on Czechoslovakia and her courtship of the other two parties, combined with Czechoslovakia's defensive alliance with the U.S.S.R., which was regarded with disfavour by many groups in Rumania and Yugoslavia.

BIBLIOGRAPHY.—*See* Crane, S. O., *The Little Entente* (London, 1931). (C. A. M.)

LITVINOV, MAXIM MAXIMOVICH (1876–), Russian politician; as agitator and journalist devoted himself from youth to revolutionary propaganda; joined the Social-Democratic Party in 1898, and in 1904, on the clash between the Menshevists and the Bolshevists, supported Lenin and the latter; participated in many congresses and conferences, and after the Revolution (1917) was the Party's plenipotentiary in London, where he was imprisoned for a short time as a hostage. Later he was the U.S.S.R. commercial representative in Estonia, took part in the conferences at Genoa and The Hague, and led the Soviet delegations at the 1927, 1928, and 1929 sessions of the preliminary disarmament commissions of the League of Nations, in 1928 signing the Kellogg Pact for the U.S.S.R. Since 1930 he has been People's Commissar of Foreign Affairs (after being for several years Assistant); in this capacity he has signed many important agreements, such as the Moscow Protocol with the Baltic States, and the non-aggression pacts with Poland, France, and the Little Entente; and has done much, by his visits to the U.S.A. and European capitals, to regain for his country political contact with the rest of the world. In May 1937, M. Litvinov attended the Coronation ceremonies in London, and in December was, under the new Constitution, returned unopposed for the Petrograd constituency of Leningrad.

LIVERPOOL. Great Britain's principal Atlantic port, and fourth largest city, on the right bank of the river Mersey, covers an area of 27,321 acres (excluding the river-bed), and had in mid-1936 an estimated population of 846,400 (census 1931, 855,688). As in the case of London, there is a tendency for population to move from the city itself into the suburban satellite towns outside the boundaries, and one of these—Great Crosby—amalgamated in 1937 with the adjoining areas of Little Crosby and Waterloo-with-Seaforth to form the new borough of Crosby. Liverpool is being rapidly adorned with modern buildings of taste and beauty, the principal being the two great cathedrals, Anglican and Roman Catholic. The latter, on Brownlow Hill, which when completed will be the second largest in the world, progressed so far during 1937 that services were held in the crypt.

During 1937, the port of Liverpool was used by 35,374,217 net tons of shipping—a much greater quantity than entered any other English port save London. In June, the Mersey Docks and Harbour Board resolved to expend a total of £732,000 on improving the docking facilities for Liverpool's coastwise trade. In October, the corporation agreed to lease to the government about 100 acres of the Speke estate for the building of a 'shadow' aeroplane factory, and work began immediately on the site, which is adjoined by a large aerodrome that will be available for use in connexion with the factory.

In July, the Royal Assent was given to the Liverpool United Hospitals Bill, which provides for the amalgamation under a single governing body of four of the city's hospitals—the Liverpool Royal Infirmary, the Royal Southern, David Lewis Northern, and Liverpool Stanley—and the building of a hospital centre for the city.

The municipal elections in November resulted in a gain of 10 seats for the Conservative Party, giving them a majority of 19 over all other parties.

LIVESTOCK: *see* CATTLE AND MEAT.

LOCAL GOVERNMENT. The reorganization of local government areas in England and Wales, begun in 1932 and intended to reduce their number and to bring their boundaries into greater accordance with social and economic realities, was almost completed by the end of 1937. The numbers of urban and rural district councils were considerably reduced, and at the end of the year there were 299 municipal boroughs, 634 urban districts, and 506 rural districts in the country. The county of Middlesex has now achieved the unpleasing distinction of complete urbanization, and is the only administrative county, other than London itself, to have no 'rural districts' within its boundaries. No additions have been made for some years to the number of municipal authorities exercising county borough powers; but a number of urban districts, especially in the Greater London (*see* LONDON) area and in the industrial midlands and north, have sought and obtained charters of incorporation as municipal boroughs, 32 having done so since 1931.

Perhaps the most interesting development in connexion with local government during 1937 was the publication on March 18 of the report of the Royal Commission appointed to consider the reorganization of the administration of the Tyneside area. A majority of the Commission recommended the creation of a new central authority, the Northumberland Regional Council, to administer the more important services (including public health, public assistance, education police, and highways) throughout the whole of Northumberland, in the county boroughs of Newcastle, Tynemouth, Gateshead, and South Shields, the boroughs of Wallsend and Jarrow, and five adjoining urban districts; and that the minor services should be administered by a new municipal borough council governing the areas of the county boroughs, boroughs, and urban districts already mentioned. A minority report, while admitting the need for a reduction in the number of local authorities, recommended only an extension of the area of the county borough of Newcastle to cover certain adjoining areas and an extension of the system of administering certain services by joint boards. After conferences had been held between the authorities concerned, the government decided to approve and support any measures the local bodies might take to bring into operation the recommendations of the minority report. An Act was passed during the year making it compulsory for local authorities to initiate contributory superannuation schemes for all their 'whole-time' officers.

During the year an acrid dispute developed between local authorities and the government over the payment of the cost of local air raid precautions measures. An offer was made by the Home Office to pay from central funds 70 per cent. of the cost, estimated at £14 millions; but on July 19 the local authorities unanimously refused this offer, demanding that the government pay the whole cost. After much discussion the government in October stated that they would undertake practically the whole cost of central supplies and organization, and contribute from 60 to 75 per cent. of the costs of local administration and maintenance, thus bringing their grant to about 90 per cent. of the total expenditure. With this arrangement the local authorities were perforce contented.

Local government expenditure in Great Britain now amounts to over £600 millions per annum, towards which in 1936–37 about £193 millions was raised by local rates, rather over half of the remainder being supplied by government grants. The rateable value of England and Wales for 1936–37 was approximately £300 millions.

United States.—The outstanding events in municipal government during 1937 had to do with public housing, relief, health, finance, and politics. The United States Housing Authority was set up by act of Congress on Aug. 21, as a permanent agency, with $500 millions to spend, primarily to encourage public housing in cities. There were, on Jan. 1, 1938, some 50 municipal housing authorities; and some 20 municipal projects, including the $13,500,000 Williamsburg apartments, have been completed under emergency federal grants. This is the beginning of public housing as a normal municipal function in the United States.

Municipal relief costs dipped somewhat during the spring and summer, but rose again towards the end of the year. The number employed on work relief decreased continuously, as many highway, bridge, park, school, and other projects came to completion. Few new major projects were undertaken. The nation-wide anti-syphilis campaign of the United States Public Health Service was spectacularly advanced through an intensive city programme in Chicago and the beginning of similar campaigns in other centres. The general health record of cities continued to improve along with a drop in death-rates.

In the field of municipal finance, the trend was encouraging. By the close of 1937, all but one of the serious debt defaults of the larger municipalities had been composed. An important study released by the New York Planning Council shows that premature land subdivision and improvement has been the chief cause of permanent financial and governmental embarrassment in many American cities. Congress enacted a new Municipal Debt Relief Act to take the place of the former Municipal Bankruptcy Act which was invalidated by the Supreme Court. Long-time municipal borrowing fell to its lowest point in 10 years, except for 1932, though the municipal bond yield for the 20 largest cities was 2·62 per cent. in Jan. 1937, the lowest recorded in 43 years. No important new sources of revenue were developed by cities. New York City and New Orleans continue to be the only important cities levying city sales taxes. Real estate continued to carry 60 to 70 per cent. of the local tax load.

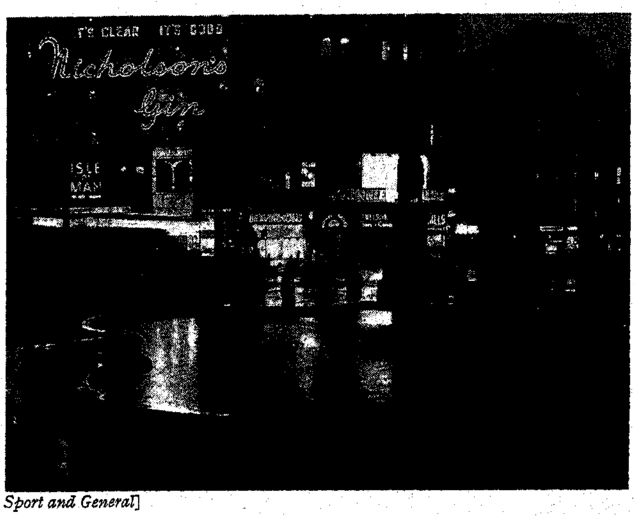
There has been a continuous spread of the merit system among municipal employees. The more notable advances during the year took place in Los Angeles, Akron, Tucson, 11 New Jersey cities, and New York City, where 'career service' is being extended upward to include the top non-policy posts, and to include police court justices as well. During 1937, pay cuts of municipal employees were restored in many centres. Training schools for city employees, attended by over 15,000 officials, were held primarily by State leagues of municipalities as in New York, Virginia, Kansas, California, and Minnesota.

Many important city elections were held. In most cities the voters as a whole supported 'law and order' and the expansion of municipal services, and showed increased political independence. The most notable election was that in New York City, in which the new Labour Party won the balance of power and joined the Fusion Party in keeping Mayor La Guardia in office. New York's large 'rubber stamp' board of aldermen disappeared on Dec. 31, and its place was taken by a city council of 26 elected by 'proportional representation'.

LOCKOUTS: *see* STRIKES AND LOCKOUTS.

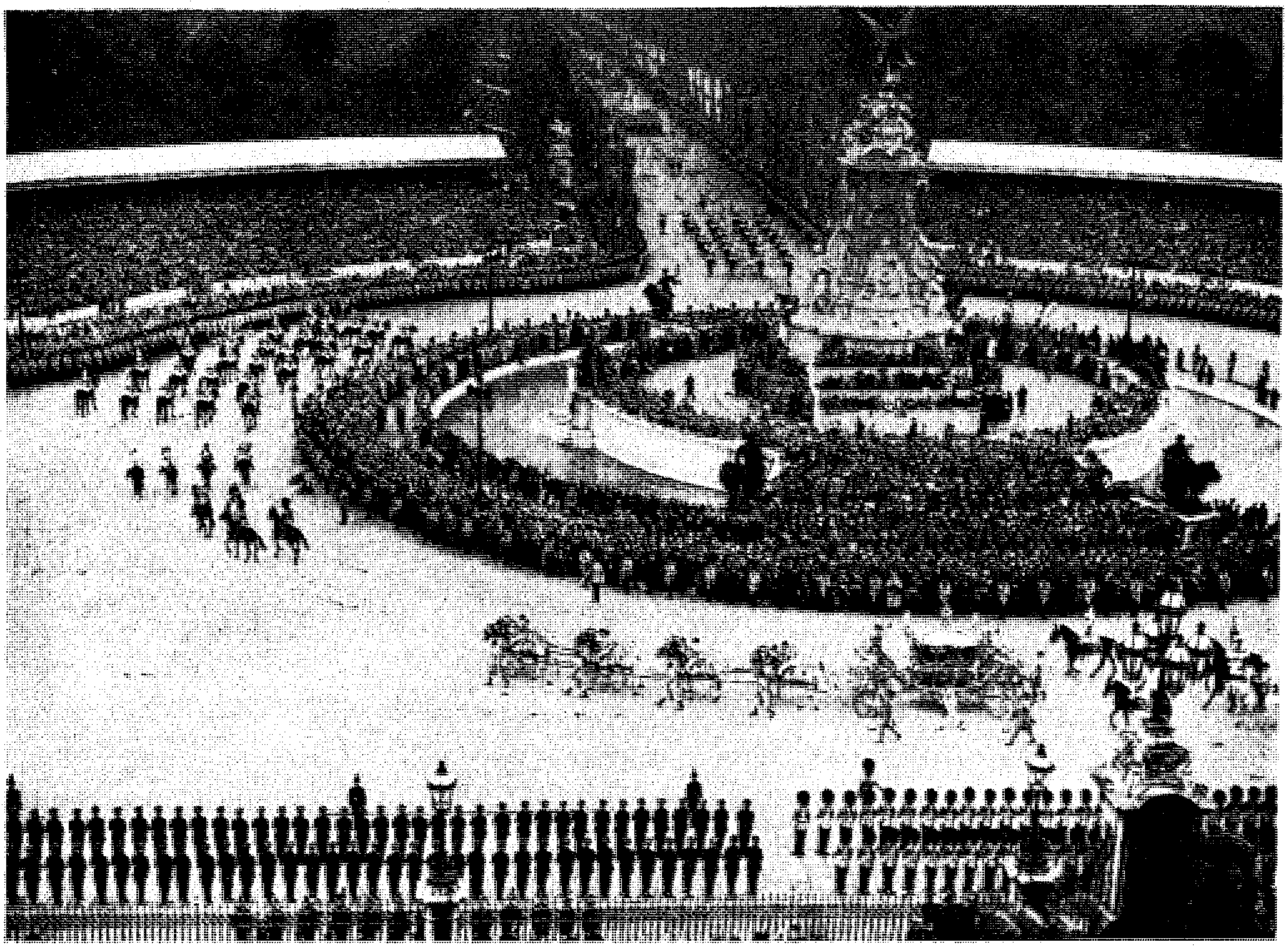
LONDON. Nineteen-thirty-seven was the year of the triennial elections for the London County Council and the Metropolitan Borough Councils. The former, held on March 4, resulted in a gain of six seats by the Labour Party, whose majority over the Municipal Reformers increased to 26. Lord Snell was unanimously re-elected chairman of the council six days later. At the borough elections on Nov. 1, the Labour Party's success was repeated, and Labour is now in control of 17 of the 28 metropolitan boroughs, having added Hammersmith and Lambeth to those it previously held. The borough elections resulted in the return of 778 Labour members, 598 Municipal Reformers, and 1 Communist—who were chosen by the 35·4 per cent. of the electors who troubled to record their votes. The newly-established borough of Edmonton, in outer London, was also won by the Labour Party.

The movement on the part of the urban districts within Greater London, though outside the L.C.C. area, to acquire borough status, largely as a bulwark against possible future plans to extend the county area, continued, and seven new boroughs—Edmonton, Romford, Epsom and Ewell, Wembley, Wanstead and Woodford, Beddington and Wallington, and Bexley—came into existence on Nov. 9, 1937; others, including Carshalton, Erith, Dagenham, Chingford, and Coulsdon and Purley, have applications for charters pending. The County of London is now surrounded with a ring of 36 municipal boroughs, all within the metropolitan police area.



Sport and General]

FOG OVER LONDON. TRAFALGAR SQUARE IN THE EARLY AFTERNOON



Keystone]

CORONATION PROCESSION. THE ROYAL COACH LEAVING BUCKINGHAM PALACE FOR WESTMINSTER ABBEY

The population of the county area is now decreasing, and more Londoners live outside the county than within it. In 1937, the estimated population of the county was 4,230,000 (census 1931, 4,397,000) and that of 'Greater London' 8,927,000 (census 1931, 8,202,818). The decrease affects almost every inner London borough; the increase affects more or less every district on the periphery—if, indeed, in view of 'ribbon development' along arterial roads, London may any longer be said to possess a periphery—besides adding considerably to transport difficulties.

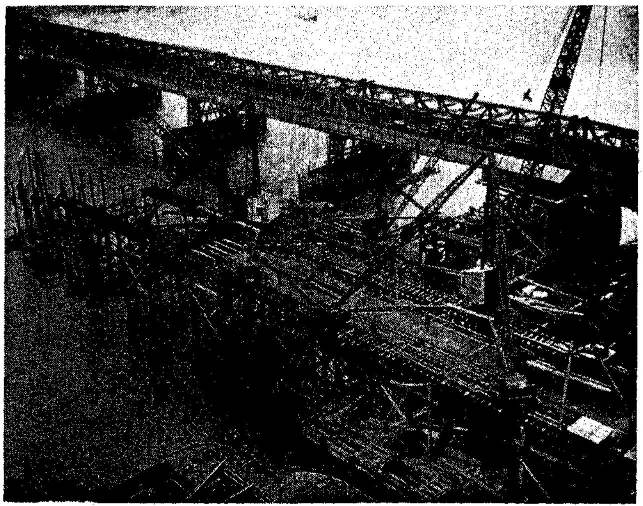
The London Passenger Transport Board, formed in 1934 to consolidate the passenger traffic facilities within a radius of 20m. of Charing Cross, is proceeding with an extensive scheme of tube railway extensions and the conversion of London's tramway system to trolleybus operation. The 'Central' (formerly 'Central London') tube is being extended to North Ilford, so that its trains may run over L.N.E.R. rails to Ongar and Fairlop in the north-east, and, by means of a new connexion with the G.W.R., to Ruislip and Denham in the west; the 'Hampstead' tube is being connected at Finchley with the L.N.E.R. lines, now in process of electrification, to Muswell Hill, High Barnet, and Edgware (via Mill Hill), and an extension is planned from Edgware to a point ¾m. west of Elstree and rather over a mile from Bushey Heath, whose name it is to bear; the Bakerloo and Metropolitan lines are being connected by a new tube between Finchley Road and Baker Street, so that Bakerloo trains may be projected to Stanmore; several stations are being reconstructed to meet modern requirements. The trams of west and north-east London have already been converted to trolleybus working, and it is anticipated that by the end of 1942, the tram will have disappeared from London. 'London Transport', whose passenger receipts for the year ending June 30, 1937, totalled £41,377,929, is now operating 3,154 coaches on its surface and tube railways, 594 trolleybuses, 2,060 tramcars, and 6,454 motor omnibuses and 'Green Line' long-distance coaches. On May 1, 1937, the bus disappeared temporarily from London streets as the result of a strike of the staff, thus depriving Coronation visitors of cheap above-ground transport in Inner London: work was resumed on May 28.

The City proper has seen no great changes during the year. Sir George Broadbridge was succeeded as Lord Mayor in November by Sir Harry Twyford. The City Corporation has decided to proceed with the construction of a municipal airport at Fairlop, Essex.

No major road improvements in London or its environs were completed in 1937; but the new Chelsea suspension bridge was opened on May 6 by the Canadian premier, Mr. Mackenzie King. The demolition of Rennie's Waterloo Bridge was completed, and tenders accepted for its successor, towards the cost of whose construction the Ministry of Transport announced on Dec. 22 that the government would contribute 60 per cent., thus ending a long-standing controversy between Parliament and the L.C.C.; its opening is fixed for the summer of 1940. A decision was taken at the end of the year to apply for powers to duplicate Blackwall Tunnel. Wandsworth Bridge is being rebuilt, and work will shortly begin on the construction of a lengthy approach road on the south side. Powers were obtained during 1937 to extend the Great West Road from Chiswick to Cromwell Road in the Earl's Court neighbourhood; and the by-pass at the intricate traffic junction at Vauxhall is nearly completed.

The rebuilding of London progresses rapidly. Although in view of the prime necessity of rearmament work has not yet begun on the new government buildings in Whitehall, the extensions to New Scotland Yard are in progress. In the City, the extensive new telephone building has greatly changed the appearance of Queen Victoria Street. The Adelphi site, between the Strand and the Embankment, was cleared, and the erection of a block of offices and flats thereon begun. Reynolds's house in Leicester Square, a building of even greater architectural interest, has also been demolished. In the West End, Bayswater, etc., the process of replacing spacious family mansions by up-to-date blocks of flats has continued at an even accelerated pace; and Vine Street Police Station, to be accommodated in a new building in Savile Row (where extensive alterations have been made), is among the well-known buildings that are going or have gone. In June, Queen Mary laid the foundation-stone of the new Church House at Westminster; and the new People's Palace at Mile End, replacing the former building burnt down in 1931, was opened at the beginning of the year. Many of the great voluntary hospitals are concerned in rebuilding schemes, among them Westminster (approaching completion), St. George's, Guy's, and the National Hospital, Queen Square: the accommodation for research and research-students has at the last-named been more than doubled. The new headquarters of the L.C.C. Fire Brigade, fronting the river at Lambeth, were inaugurated by the King and Queen in July. The increasing work of municipal authorities is causing many of them to seek new accommodation; a fine town hall for St. Pancras in Euston Road was opened in the summer, a site has been chosen for a new town hall at Hammersmith, Wandsworth has erected a range of civic buildings, and a town hall for Poplar is in course of erection in Bow Road. Work continued on the new London University building in Bloomsbury, inaugurated in 1936, and its now completed tower has become an outstanding London landmark.

Additional sculpture galleries at the Tate Gallery were opened by the King and Queen in June, and the newly organized National Maritime Museum at Greenwich came into use, replacing the former Royal Naval Museum there. The principal addition to London's statues was an equestrian figure of Lord Haig in Whitehall.



Fox Photos]

THE NEW WATERLOO BRIDGE. SHOWING WORK IN PROGRESS

Slum clearance plans are being actively pressed forward: in 1936–37, fifty-six areas, involving the displacement and rehousing of 25,460 persons, were cleared, and the L.C.C. erected 7,504 new working-class dwellings, 5,230 of them flats. Clearance schemes are in progress at Battersea, Bethnal Green, Mile End, Southwark, and elsewhere. A loan of £10 millions was issued by the L.C.C. in June for health and housing expenditure.

The L.C.C.'s education estimates for the year foresaw an expenditure, including exchequer grants, of £9,767,498 on elementary and £3,617,964 on higher education. The public health of London in 1937 calls for no comment, save for the now customary slight influenza epidemic at the beginning of the year; but Londoners were startled at the end of the year at the news of an outbreak of typhoid at Croydon; the source of infection was traced to a contaminated well. Drastic steps were taken to prevent the spread of the outbreak, which by Dec. 31 had resulted in 30 deaths, 289 cases in all having been notified.

The scheme for establishing a 'Green Belt' round London made progress, additional areas being scheduled for preservation in Middlesex, Buckinghamshire, Surrey, and Essex. The L.C.C. has committed itself to a maximum expenditure of £2 millions for this purpose.

In the endeavour to avoid confusing duplications, the L.C.C. has undertaken an extensive overhaul of London street names. Several hundreds of changes were made during 1937, and it is hoped that in two years' time no street name will be used more than once within the county area.

The London fire alarm system has been reorganized and alarms of a new pattern installed. A beginning has been made with the provision of street police boxes, containing first-aid apparatus and a telephone by which the police can be communicated with instantaneously, and 700 such boxes have been erected. A report was issued on July 29 recommending a wholesale reorganization of the London police court system, involving the enlargement or rebuilding of most courts, the reduction of their number from 14 to 10, and the appointment of additional magistrates; somewhat similar steps have also been taken in respect of the coroners' courts.

Anti-gas and air-raid precautions received much attention during 1937, and most of the metropolitan boroughs have organized schemes in this connexion under the charge of full-time precautions officers. The whole of the fire brigade is receiving instruction in anti-gas measures.

The port facilities of London—used in 1936 by the record figure of 62,169,000 tons of shipping—are being improved by the construction of new overland dock approaches at Shadwell, West Ham, and elsewhere.

The L.C.C.'s budget for 1937–38 provided for a total gross expenditure of £33,545,000 in 1937–38, of which £21,851,450 was to be raised by rates. The county's rateable value is estimated at £60,216,000; its debt on March 31, 1937, was £110,429,881. The average rate levied in the metropolitan boroughs in 1937–38 was 12*s.* 2*d.* in the pound; the highest-rated borough (17*s.* 6*d.* in the pound) being Poplar, the lowest (9*s.* 9*d.* in the pound) Westminster; though it must be noted that, the latter being levied largely on a non-resident population, the rates per head of population in the two cases quoted are £5 10*s.* 3*d.* and £39 11*s.* 2*d.* respectively. (L. H. D.)

LONDON NAVAL CONFERENCES. During the years 1935–37 a series of Naval Conferences have been held in London. Of these the most important met on Dec. 9, 1935, and culminated in the signing, at St. James's Palace on March 25, 1936, of the London Naval Treaty of that year. Under this the British Empire, the United States of America, and France undertook, for the period from 1937 to 1942 inclusive, to exchange information about new construction and to refrain from building or acquiring any new warships save those falling within certain qualitative limitations. These limitations were, for capital ships, 35,000 tons, 16-in. guns, and an age limit for replacement of 26 years; for aircraft-carriers, 23,000 tons, 6·1-in. guns, 20 years; for light surface vessels (cruisers and destroyers), 8,000 tons, 6·1-in. guns, 16 to 20 years; and for submarines, 2,000 tons, 5·1-in. guns, 13 years. Definitions of various categories of ships were also fixed by this treaty.

Unfortunately, neither Japan nor Italy, which had attended the conference, would subscribe to the treaty. One of the results of this abstention has been the choice of the 16-in. gun as the heaviest weapon for capital ships, instead of the 14-in. as had been proposed.

During the year 1937 conferences were held in London at various dates between the British government and delegates from Germany, Soviet Russia, Norway, Sweden, Denmark, and Finland, with the object of arranging for the extension to the fleets of those Powers limitations corresponding to those of the Three-Power Treaty of 1936. As a result of these meetings, two separate treaties were entered into on July 17, 1937, between Britain and Germany and between Britain and Russia, under each of which the same provisions as regards exchange of information, definitions, age limits, and qualitative limitations were agreed to by the contracting parties. Both the German and Soviet governments insisted on certain exceptions to these conditions as touching their liberty to construct a limited number of cruisers mounting guns of heavier calibre than 6·1-in.

So far no treaties have been signed by Norway, Sweden, Denmark, or Finland, but there is reason to suppose that these four Powers will be prepared to adhere to the limitations fixed by the Anglo-German and Anglo-Soviet Treaties.

By far the most important provision of the three treaties above mentioned, and therefore the greatest achievement of the various conferences, is the clause providing for the exchange of information about new naval construction. This is designed to avoid the atmosphere of suspicion which is otherwise apt to arise between rival Naval Powers, an atmosphere which is not conducive to the growth of peaceful relations. (F. E. McM.)

LONDON UNIVERSITY. There are now 36 colleges and 24 institutions connected with the university, and 244 professors, 154 readers, and 945 recognized teachers, together with many assistants. Of the recently established chairs, perhaps the most interesting is the Weldon Chair of Biometry, devoted to the higher statistical study of biological problems, and held by Professor J. B. S. Haldane at University College. A slight drop in the number of students must be recorded for 1937, although in five years the number of internal students has increased by 2,820, the total being 13,613. Decreases in arts have been almost completely offset by increases in laws, medicine, engineering, and, less noticeably, in science. Apart from London graduates, 446 students from 105 other universities were admitted to advanced and post-graduate courses during 1936–37. Students make their own arrangements for residence, but there is now accommodation in University College and other hostels, and in inspected lodgings for about one in five. External students are now registered, and arrangements can be made for them to study under advice. Of 6,779 such students entering for examination, 3,778 are in university colleges and other institutions.

The special lectures continue. These are free to the public and delivered by British and foreign scholars. In 1936, 152 such lectures were given in 54 courses. Eleven lecturers were from abroad. In 1934 the university, through the Institute of Historical Research, assumed responsibility for the *Victoria County History*. Since then, five volumes have been published and one index, and in 1937 the one-hundredth volume was completed.

The Senate House block of the new buildings in Bloomsbury is in full occupation. The central library is occupying its new home in the buildings, and the premises of the Institute of Education are nearing completion. Funds are still needed for housing the Institute of Historical Research. In the near future work will commence on the great hall, and on premises for the School of Oriental Studies and Birkbeck College. Royal Holloway and Queen Mary Colleges held jubilee celebrations in 1937. (S. J. W.)

LORIMER, GEORGE HORACE, American journalist; born at Louisville, Ky., Oct. 6, 1868; died at Wyncote, Pa., Oct. 22, 1937. A brief account of his life may be found in the *Ency. Brit.*, vol. 14, p. 395. He retired from the editorship of *The Saturday Evening Post* on Jan. 1, 1937.

LOS ANGELES, in Los Angeles county, California, has an area of 442sq.m.; approx. population 1,400,000, compared with 102,479 in 1900. It is governed by a mayor and 5 district councilmen. Building projects include a Federal building, costing $7,280,000, and the Union railway station, costing $10 millions. The University of Southern California in 1937 announced a gift of an art gallery and private collection by Mrs. Walter Harrison Fisher; Occidental College celebrated its 50th anniversary; George Pepperdine College, dedicated to fundamental Christian ideals, opened to students in September. Work progressed on the main aqueduct (242m. long with 108m. of hard rock tunnels) of the Metropolitan Water District, which will be completed in 1939 with a capacity of 1,000 million gals. daily, supplied from the distant Colorado river.

Some 200 new industries were established during the year at an outlay exceeding $6 millions. The total 1937 industrial production was approximately $1,000 millions. Strikes and minor disturbances, in persistent effort to unionize labour, brought some uneasiness, but the city remained the leading open-shop centre of the Pacific coast. Automobiles in the city numbered 504,587. More than 1,700,000 motor passengers visited Los Angeles during the year, spending $216,700,000. Approximately 1,000 deaths from automobile accidents were recorded. Rail communications were improved by the introduction of rapid streamlined trains, the Union Pacific's *City of Los Angeles* observing a regular 39¾-hr. schedule between the city and Chicago. Motion pictures represented an investment of $2,000 millions, with the season's production outlay at Hollywood studios estimated at $165 millions. Los Angeles harbour took second place in America in total tonnage, with water commerce for 1936 of $925,754,186.

LOUISIANA: *see* UNITED STATES OF AMERICA.

LUDENDORFF, ERICH, German soldier; born at Kruszevnia, Posen, April 9, 1865; died at Munich, Dec. 20, 1937. A full account of his life and his campaigns during the World War may be found in the *Ency. Brit.*, vol. 14, pp. 469–71. His later years were spent in an almost complete obscurity, which was hardly lightened by his advocacy of a new paganism founded upon the old Teutonic mythology.

LUMBER: *see* TIMBER.

LUSTIG, ALESSANDRO, Italian pathologist; born at Trieste, 1857; died at Marina di Pietrasanta, Italy, Sept. 24, 1937. After graduating at Vienna, he steadily built up an international reputation through his work in pathology and bacteriology, having studied bubonic plague in India, and leprosy and malaria in the Argentine and Brazil. As professor of general pathology in the Florentine University since 1890, he wrote his great work, the *Trattato di Patologia Generale.* He was also a member of the Italian Senate.

LUTHERANS. The most reliable statistics available at the beginning of 1937 gave the number of Protestants in the world as 135,000,893. Of that number, Lutherans were reported as 63,108,842. The Lutherans are found in all parts of the world, located geographically as follows: Africa, 376,977; Asia, 432,893; Europe, 56,662,429; North America, 4,983,134; Oceania, 348,704; South America, 304,705.

The Lutheran Church is organized under various forms of government, usually in conformity with the political government in the different countries, with no world organization except the 'Lutheran World Convention'. This organization came into existence in 1923, as the result of co-operative interest in the relief of distress following the World War, and includes the vast majority of Lutherans in its membership, especially in Europe and America. This body accepts the historic Lutheran Confessions of faith as its basis of unity, and the common call to Christian service as its basis for co-operation. At the 1937 meeting of the executive committee, it was decided to hold the next meeting of the Convention in the United States in 1940. First steps were taken by this body in 1937 to define a basis and specify terms for Lutheran participation in major world movements with other Christian bodies.

Political conditions in Germany continue to press great problems upon the Lutherans in that country, where the church has been so closely connected with the State for such a long time. Changes in the form of civil government have made adjustments in relationship a necessity. The problems of religious liberty, in the existing order, without disestablishment, or disestablishment without disastrous dismemberment, have not yet been solved. The vast majority of Lutherans in Germany are steadfast in their purpose to maintain religious liberty and to find a way, at the same time, by which they may give loyal support to their government.

LUXEMBURG, independent grand-duchy, Europe, S.E. of Belgium (commercially allied). Capital, Luxemburg (57,740). Ruler, Grand-Duchess Charlotte (born 1896; succeeded 1919). Government, Catholic-Liberal (1937). Area, 999sq.m.; population, 296,913 (mainly Catholic), one-third agricultural; iron mines. Communist Party dissolved by law (1937). Currency, franc (= 1·25. Belgian francs; 1935).

LYNCHINGS. Eight lynchings in the United States during 1937 brought the gruesome total since 1882 to 5,114. All eight victims were in the custody of the law. Three were taken by mobs from gaols; five from peace officers. All eight were negroes; only one was charged with rape. But though the total of those lynched was four less than in 1936, seventeen less than in 1935, and but half of the number lynched in 1934, the method of mob execution of two of 1937's victims shocked the entire country by its savagery. Roosevelt Tewnes and 'Boot Jack' MacDaniels, charged with murder, on April 13, 1937, were tied to trees by a mob at Duck Hill, Miss., stripped of their clothing, and tortured to death with blow lamps.

News of this bestiality caused a profound reaction when it was dramatically announced on the floor of the lower house of Congress, where debate was then in progress on the Gavagan bill to make lynching a crime punishable by the Federal government instead of leaving it to the several States. Two days later the House of Representatives passed the bill by a vote of 277 to 119. In the Senate the bill became entangled in a welter of other legislation towards the end of both the regular and the special session. The Senate set the bill as the first measure to be considered in the regular session of Jan. 1938.

Public opinion polls indicated that 72 per cent. of the people of the United States favour the law and, perhaps even more significant, that 59 per cent. of the inhabitants of the Southern States, where all of 1937's lynchings occurred, favour Federal anti-lynching legislation. The Wagner-Van Nuys-Gavagan bill lays its chief emphasis on punishment of wilfully derelict peace officers, and on financial penalties on counties which permit lynchings within their orders. But even more important, American public opinion seemed, as the year closed, united against lynch-law. It is that opinion only which can make Federal and State laws effective.

LYONS, JOSEPH ALOYSIUS (1879–), Australian statesman; educated at the University of Tasmania, Mr. Lyons entered the cabinet there in 1914, and was its premier from 1923 to 1928. In the Federal government he was postmaster-general and minister of works and railways, 1930–31, and treasurer from 1932 to 1935. Originally a member of the Labour Party, he later joined the United Australia Party, of which he became leader in 1931. After the general election in December of that year he became premier of the Commonwealth, and his drastic measures were successful in restoring its credit after a serious financial crisis. In 1936, Mr. Lyons was made a Companion of Honour; and in May 1937, he came to London as Australian representative at the Coronation, and attended the subsequent Imperial Conference: some unfavourable comment was aroused at the time by the frequency of Australian ministers' foreign trips and the consequent heavy expense. During his visit Mr. Lyons received the freedom of London and of Aberdeen. At the general election of Oct. 23, in spite of widespread expectations of his defeat, Mr. Lyons's ministry received a majority, the Labour opposition gaining only one seat.

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MacDONALD, JAMES RAMSAY, British statesman; born at Lossiemouth on the Moray Firth, Scotland, Oct. 12, 1866; died at sea, Nov. 9, 1937. For details of his life *see Ency. Brit.*, vol. 14, pp. 556–57. When, following the financial crisis of 1931, MacDonald's second Labour government fell, he remained as prime minister of the National government. He was president of the Lausanne Conference, 1932, and of the World Economic Conference, 1933, and in the latter year visited President Roosevelt in Washington. In June 1935, owing to failing health, he resigned the premiership and took the office of Lord President of the Council. In the general election of Nov. 1935, MacDonald was the object of a peculiarly bitter attack by the Labour Party in his constituency of Seaham, and was overwhelmingly defeated; but in Feb. 1936 he was returned at a by-election for the Scottish Universities. In May 1937, together with his successor in the premiership, Earl Baldwin, MacDonald resigned from the cabinet, refusing the offer of a peerage. It was whilst he was on his way, accompanied by his daughter Sheila, to South America to enjoy a long rest, that MacDonald died suddenly on board the liner *Reina del Pacifico*. His body was brought from Bermuda by the cruiser H.M.S. *Apollo*, and was interred at Lossiemouth, his family having declined the offer of burial in Westminster Abbey.

Elliott & Fry]

THE LATE MR. J. RAMSAY MACDONALD

MACHINERY AND MACHINE TOOLS. During 1937, the machine-tool industries of many countries were intensely active owing to the abnormal demands of re-armament programmes; consequently, the machine-tool manufacturer had no time to develop new designs, whilst experimental work, so necessary to continue the normal improvement of standard machines, had to be reduced to the minimum. Thus we find no radical developments in the industry generally, but rather a consolidation of innovations of recent years, resulting in products of greater accuracy maintained over longer periods, increased rigidity for heavy duty work, intelligent grouping of controls to lessen operator fatigue, and the extended use of the machine as a self-contained unit making for flexibility in the machine-shop layout to suit changes in production programmes.

The progress made during 1937 in the standardization of steels has been invaluable to the machinery and machine-tool maker. In reducing the number of steels cast to definite specifications, the scope of each has been widened to cover a larger field of application than hitherto, so that the choice of the right steel for the particular requirements of the manufacturer is much less problematical. With the standardization of steels has also come a greater knowledge of the use of the many and various alloys, and this, combined with more correctly applied metallurgical control of heat-treatment, has greatly benefited the finished product. At least one result of the progress in this direction is the reduction effected in the noise of reciprocating or revolving motions, particularly noticeable where gearing is concerned, the smaller gears now used being much quieter, although running at higher speeds than previously. The most important contribution to quieter gearing is, however, the grinding of the gear-tooth profile after hardening.

The year under review has seen important changes in machine design to ensure the rigidity so necessary to obtain full advantage of the tungsten and molybdenum cemented carbide and other super-cutting tools now available. Instead of relying on the weight of masses of metal to give the desired result, a more correct distribution of metal with adequate cross bracing between main members has increased production capabilities very considerably. A wider application of nitrided steels, having the hardest-known surface attainable, has also taken place, particularly in the use of nitralloy spindles for grinding machines where maximum rigidity is essential. At the high speeds at which such machines are run the nitrided case is able to preserve a stability in the spindle at working temperatures above normal, with the result that it has been possible to reduce bearing clearances from 0·0015in. (0·038mm.) down to 0·00025in. (0·0062mm.). In conjunction with this, special spindle-bearing lubricating oils have been produced with a greater viscosity to withstand temperature variations, and the degree of rigidity thus obtained results in a higher finish on the work and less rapid wear on the grinding wheel.

A further notable advance is a patented grinding wheel-head, which goes a step farther by using an oil-pressure controlled spindle-bearing on which the load is constant, so that no looseness of the spindle can occur with lowered oil viscosity and bearing expansion due to increased running temperatures.

The mention of oil as a controlling medium brings us also to the extended use of hydraulic speed and feed mechanisms in place of mechanical ones. From its considerable development in the grinding-machine field, it has now been applied to many other types such as lathes, shaping, planing, drilling, milling, and broaching machines. Principal amongst its advantages are: (1) shockless reversal for reciprocating motions; (2) an infinite range of feeds and speeds within defined limits; and (3) the mechanism is simpler, and contains fewer moving parts than that for mechanical operation.

The cemented carbide-cutting tools previously mentioned have now passed from their experimental stage to one of established use but, owing to their phenomenal metal-removing capabilities, 1937-designed machines have had to provide still greater swarf clearances in bed designs and even mechanical methods of removing the cuttings have been devised to prevent swarf congestion. The use of this product of the metallurgist has also been extended considerably during the year to the manufacture of dies and moulds for metal extrusion purposes.

The reduction of idle time in machine operation is a very important factor in the endeavour to increase production, and during the period under review, very considerable improvements have been made. Perhaps the most outstanding is the multi-spindle fully automatic machine which completely finishes work from the bar, not only at rates of production never before achieved, but to a very fine degree of accuracy. The fully automatic grinder is also another of the machines to have been improved considerably in design and performance.

On machines of a less fully automatic operation, we find that the reduction in idle time is linked up with a greater concentration on reducing operator fatigue. Several features of design are affected by this, but the machine controls naturally have come in for the most attention. On many machines the number of levers and handwheels has been reduced to the minimum, and these are more intelligently grouped for complete and immediate control from the operator's working position. Where more than one working position is essential, such as with certain types of milling machines and lathes, speed and feed controls are duplicated, so that full control is available for the operator from the position most suitable for the work in hand. The use of the single-lever control was extended during 1937 to a wider range of machines, several motions being operated on the ' joy stick ' principle, and in certain applications the direction of lever movement indicating the direction of the motion. Single-lever dial speed and feed selectors were also adopted on a wider scale.

The motorization of the machine tool was carried a step farther by fitting motorized spindles to certain high-speed machines, the spindle of the machine forming the armature shaft of the motor. Another important innovation was the overhead busbar system, which allows the power distribution system for individually driven machines to be installed in a shop before the machines are in position, and subsequently enables the layout to be altered at any time by merely disconnecting the machines from plug-in fuse boxes.

A feature of 1937 was the very high degree of accuracy demanded from the manufacturer by the machine-tool user, which led to the wider adoption of systems of fine tolerances. A further result was the production by specialists of such components as ground lead screws of an accuracy unobtainable by the average machine-tool manufacturer. (W. J. T.)

MACMONNIES, FREDERICK WILLIAM, American sculptor; born at Brooklyn, N.Y., Sept. 20, 1863; died in New York, March 22, 1937. A biographical notice is in the *Ency. Brit.*, vol. 14, p. 596. His *Civic Virtue* was in 1933 removed from the City Hall park, New York, to Foley Square. In the same year he was made a commander of the Legion of Honour by the French government.

McNEILE, CYRIL, Lieut.-Colonel (' SAPPER'), British novelist; born in 1888; died at Pulborough, Sussex, Aug. 14, 1937. He was educated at Cheltenham College and the Royal Military Academy, Woolwich, and joined the Royal Engineers in 1907. He was promoted captain in 1914 and retired as lieut.-colonel in 1919. Known chiefly as an author using the pseudonym ' Sapper ', his novels included: *Sergeant Michael Cassidy*; *Men, Women, and Guns*; *No Man's Land*; *Mufti*; *Bulldog Drummond* (1920); *The Man in Ratcatcher* (1921); *Jim Maitland* (1923); *The Final Count* (1926); *Temple Tower* (1927); *Tiny Carteret* (1930); *The Island of Terror* (1931); *Ronald Standish* (1932). His play, *The Way Out*, was produced in London (at the Comedy Theatre) in 1930, and just before his death he had collaborated with Gerard Fairlie in another play, *Bulldog Drummond Hits Out*, produced in July at the People's Palace, London. He married Violet Douglas, and had two sons.

MADAGASCAR. An island separated from S.E. Africa by the Mozambique Channel, a French colony; governor-general, Leon Cayla; area, *c.* 241,094sq.m.; population (1932), including Mayotte and Comoro Islands, 3,772,570.

The economic situation during 1937 was satisfactory. Agriculture in particular has made important progress. The cultivation of spices, vanilla, and rice has improved both in return per hectare and, often, in quality. The production of coffee has amounted to more than 27,000 tons. These results are the more noteworthy in that one of the richest agricultural districts of Madagascar, the hinterland of Diego Suarez and Majunga, was devastated by a cyclone in the spring of 1937. At Diego itself houses, drains, and electric and telephonic systems all had to be reconstructed.

An important programme of economic undertakings has been carried out. In the extreme south (the Autandroy district), traditionally looked upon as the dried-up country, works of hydraulic agriculture have made possible the irrigation of several thousands of hectares. In the north, destruction caused by the cyclone was repaired, and maritime works begun or further enlarged at Diego Suarez and at Majunga, also at Tamatave. Madagascar was faced in 1937 with a very delicate social problem in the shape of the assimilation of a considerable number of Chinese labourers employed in agriculture.

MADEIRA. Portuguese island, in the Atlantic Ocean, 350 miles off N.W. Africa, largest (270sq.m.) of a group (sometimes ' The Madeiras '; officially, Funchal district of Portugal; area, 314sq.m.; population, 211,601—1930; density, 673·8 per sq.m.; capital, Funchal, seaport, 52,082), including Porto Santo and three uninhabited islands. Its ten communes are: Calheta (20,193), Camara de Lobos (17,578), Machico (17,343), Ponta do Sol (12,520), Porto Moniz (5,910), Porto Santo (2,416), Ribeira Brava (16,309), Santa Ana (9,814), Santa Cruz (24,551), São Vicente (9,182). Agriculture occupies the Portuguese, Moorish, Negro, and Italian inhabitants. Products: wine, sugar, bananas; home industry, embroidery.

MADRAS. The chief city in southern India, Madras has a population of 647,230, of whom 80 per cent. are Hindus, 11 per cent. Moslems, and over 8 per cent. Christians. It has a municipal committee of 50 members, with an annual income of close on £880,000. The port trust, with 15 members, has a revenue of about £200,000 and a capital debt of £1,160,000.

MADRAS PRESIDENCY. This, the most southern province of British India and officially styled the Presidency of Fort St. George, has an area of 142,277sq.m. and a population of 46,740,107, of whom 88 per cent. are Hindus, 7 per cent. Moslems, and 4 per cent. Christians. There are 26 civil districts. The governor (Lord Erskine since Nov. 1934) has his headquarters at Madras (pop. 647,230) in the winter and at Ootacamund (Nilgiri Hills) in the summer. Among a number of other large towns the most populous are Madura (182,018), Trichinopoly (142,843), Salem (102,179), and Calicut (99,273). The legislature consists of an assembly with 215 seats and a council with 55 seats; and the cabinet, strongly of the Congress persuasion, is the largest in India, comprising ten ministers, with Mr. C.

Rajagopalachariar as premier; they have, however, spontaneously reduced their emoluments to the equivalent of £450 a year each. On the constitution of the new province of Orissa (*q.v.*), certain tracts were transferred to it from the Ganjam and Vizagapatam districts of Madras. The provincial statistics have not yet been adjusted, so that all figures below refer to the original Presidency.

The prevailing languages are Tamil and Telugu, with Malayalam and Kanarese in special areas. Education is relatively advanced, one man in every six and one woman in every 39 being literate in their own vernaculars. There are no fewer than 75 colleges in the province and over 50,000 schools, the total number of persons under instruction being in excess of 3 millions.

One-seventh of the total area is under forests. The soil, except in the river deltas, is not naturally rich, and works of imposing magnitude are steadily being advanced for using the waters of the great rivers for irrigation purposes: at present about one-fourth of the cropped area is protected by canals, tanks, and wells from the vagaries of the monsoon rains.

The premier crop, most of which is grown under irrigation, is rice (11·7 million acres). Next come the millets (11·1), pulses (7·1), oilseeds (5·6), and cotton (2·2); there is also an active growth and manufacture of tobacco, the cheroots of Trichinopoly having an ancient reputation. The cotton industry is served by 29 mills, with over 4,000 looms; there are 323 rice mills, and a number of smaller factory activities. The province has little mineral wealth, except for a certain amount of manganese. Its excise system, based largely on the juice of the toddy palm, has always been one of the most elaborate in India; but the new ministry is adopting a prohibition policy, and has enforced it experimentally in the Salem district.

Madras States.—These are now in charge of an agent to the governor-general, with his headquarters at Trivandrum. They include the progressive States of Travancore (ruler, Maharaja Sir Rama Varma Ramaraja; with a salute of 19 guns) and Cochin (Maharaja Sir Rama Varma; 17 guns). They are famed for the beauty of their coastal creeks and inland waterways.

Laccadive Islands.—These, as well as the Amini Divi islands, are administered as part of the province, but the contact is slight. (ME.)

MADRID, capital city of Spain. A description may be found in the *Ency. Brit.*, vol. 14, pp. 616–17. The population (est. Dec. 31, 1934) was 1,048,100. There are now some 12m. of underground railway. Madrid's history in 1937 is the story of its part in the Spanish Civil War. It ceased temporarily to be the capital of Spain in Nov. 1936, when the government moved to Valencia, followed by the British embassy on Jan. 3, 1937. General Franco's troops renewed their attacks on the city in early January, accompanying them with severe air-raids; and on Jan. 9 all noncombatants were ordered to leave the city. Fighting in the Madrid neighbourhood was fierce for several weeks, but at the end of February and in early March the insurgent attacks were repulsed, and in April the 'White' troops who had been holding out in the university city were dislodged. On April 24, the Madrid Defence Council, under General Miaja, which had controlled the city since the previous November, was superseded by a city council of 20 members representing all the 'Popular Front' groups, charged with full authority in civil matters, Gen. Miaja being left in command of the government troops on the Madrid front. The city was heavily shelled by the insurgents in early June; in July, General Franco's forces renewed their offensive, but were pushed farther back by the defending troops. It was announced in August that in the 12 months since the beginning of the Civil War, 768 Madrileños had been killed, and 3,567 wounded, as the result of artillery bombardments and aerial attacks. During the late summer and early autumn there was little fighting in the Madrid area; in September it was announced by the government that a plot, in which 5,000 persons were said to be involved, had been discovered within the city on the part of a 'fifth column' of sympathizers with General Franco. Severe air attacks on Madrid were resumed in late November and early December, but no serious attempts to take the city by the insurgent land armies were made in the latter part of the year.

MAGAZINES AND PERIODICALS. In both Great Britain and the United States, an outstanding feature in the magazine world during 1937 was the rise to popularity of the 'pocket' magazine. In England, the idea was copied from the States, where the success of the *Reader's Digest*, a magazine of this type founded in 1922, had, by 1937, given rise to a flood of imitators, many of them being of very ephemeral duration, but over 60 surviving at the end of the year. In England *Lilliput* (6*d.*) appeared in July, and within a few months was claiming a circulation of 100,000; *Parade* (1*s.*) followed in September, and *Men Only* and *Eve's Journal*, both at the latter price, are other successes of this type. Of similar format but very different content is *Fact* (6*d.*), a 'leftist' monthly monograph on world affairs first published in April; it is edited by Raymond Postgate, and numbers among its contributors George Lansbury (*q.v.*), Lancelot Hogben, Storm Jameson, and Francis Meynell.

In the United States there is also to be chronicled the rise of the large-paged photographically illustrated magazine, typified by *Life* (1936) and *Look* (1937), each with circulations approximating 2 millions, and the continued growth of the cheaper, or 'pulp', magazines, which reached a total of some 150 with a combined circulation of about 10 millions. This experience was not shared in Great Britain, the reason being, perhaps, partly attributable to the rise in production costs owing to the higher cost of paper and other materials and to the adoption of the 45-hour week by printers. Indeed, although Allied and Amalgamated Press alone still published between them over 100 magazines (many of them devoted to women's interests), ranging from high-class monthlies at 1*s.* to the 'factory-girl and van-boy' weekly at 2*d.*, a number of casualties are to be recorded: *Popular Wireless* and *The Outlook* ceased publication, the former after 15 years; the *Storyteller* was merged with the *Red*, the *Novel* with the *Grand*, *Nash's* with *Good Housekeeping*, the *National Review* with the *English Review*, and the *Methodist Recorder* with the *Times and Leader*. On the other hand, some of the finest magazines ever published in Great Britain or elsewhere were seen among the special Coronation numbers issued in May, and the *Radio Times* created a world record sales achievement by selling 3,540,547 copies of its special Coronation number; the year saw many additions to the long list of titles on sale at the bookstalls, besides the 'pockets' already mentioned.

Among the newcomers, *Night and Day*, an excellent counterpart of the very excellent *New Yorker* (of N.Y. City) first published, at 6*d.* weekly, in July, came to an untimely and unexpected end in January 1938; but many other births of 1937 seem to have established themselves. Among these in the monthly group should be mentioned *Psychology* (6*d.*), an anglicized version of the popular American publication of the same name, *Practical Housekeeping* (3*d.*), *Fiction* (4*d.*), *Hospital Management* (1*s.*), *Caravan World* (4*d.*), *The British Screen* (4*d.*), *Stamp Review* (6*d.*), and *Fishkeeping* (6*d.*); while among the weeklies are the *Cinema Guide, Cat World, Speedway World, Ice Hockey World, Wayfarer Gazette,* and *Woman,* each at 2*d.*, and the *Weekly Sporting Review* at 3*d.*

During the year, *Punch* issued its 5,000th number; and various staff and other changes took place, the chief of these being the passing, in February, of the control of Illustrated Newspapers, Ltd., to a group headed by Lord Southwood (of Odham's) and Sir John Ellerman, Bt. This company, with its subsidiaries, owns the *Tatler, Bystander, Sphere,* etc., and controls the *Illustrated London News, Sketch, Britannia and Eve, Men's Wear,* and *Draper's Record.* (L. H. D.)

MAIL-ORDER BUSINESS. Retail purchasing by mail-order of goods selected from a comprehensive illustrated catalogue is naturally of greatest advantage in highly civilized countries where, nevertheless, a large proportion of the population is remote from ordinary shopping facilities. It is therefore not surprising that the principal examples of this form of trading are found in the North American continent, and particularly in the United States. As compared with ordinary shops and stores, mail-order businesses can effect considerable economies in central premises and payroll. But against these economies they have to set off the very high cost of producing and distributing catalogues—in some cases amounting to about 5*s.* per copy. Their costs of distributing merchandise are also high, but in the case of the principal mail-order businesses this is balanced by their ability to purchase from manufacturers in large quantities at very favourable prices.

In common with most businesses, mail-order firms in the United States suffered materially during the depression beginning in 1929. The combined mail-order and retail store net sales of the three largest mail-order houses (Sears, Roebuck & Co.; Montgomery Ward & Co.; and Spiegel, Inc.) fell in 1933 to $570,551,000; in 1936, however, they had recovered to $900,960,000. The 1937 figures for the first two houses named a show combined net sales increase 12·7 per cent. over their 1936 level. Examination of their figures month by month during 1937 reveals, however, that the ratio of increase becomes smaller as the year progressed; this retarding tendency became more pronounced during the autumn, when the seasonal upswing of business in general was less than normal.

The history of United States mail-order business in recent years shows the progressive development of certain tendencies. There has been an increased emphasis upon private brands, *i.e.* upon merchandise manufactured and sold under the proprietary trade names of the mail-order houses themselves, in competition with nationally advertised manufacturers' brands which are frequently also offered by the same houses. Again, there has been a rapid increase in the volume of instalment accounts, resulting not from a loosening of credit lines, but from an increase in the kinds of merchandise made available to instalment purchasers; the bulk of the increase achieved has been from the sale of major household appliances and home modernizing equipment.

Lastly, one must note the entry of the first two mail-order houses mentioned into the retail store field. This they started experimentally in the year 1920, but from 1928 onwards the number of retail stores established by them increased rapidly until by the end of 1937 it reached a combined total of approximately 930. To-day the retail store trade of these two houses is, in fact, larger than their mail-order trade.

In Canada, where conditions are equally favourably suited to the development of mail-order trading, this type of business is mainly in the hands of the T. Eaton Company Ltd., a firm which started in the department store field and to-day also operates some one hundred and thirty department chain and grocery stores. Precise figures for 1937 are not available, but the total of mail-order business in Canada (exclusive of retail store business operated by the same firm) is now in the region of $60 millions annually.

Conditions in Great Britain clearly offer less scope for the development of mail-order business. A number of such firms were in existence in the early days of the twentieth century, selling goods by mail order for cash, but since 1918 their scope has been progressively reduced by the increase in shopping facilities and in popular means of transport.

In recent years, however, certain firms have rapidly built up a large mail-order business in combination with what is termed 'club trading'. Under this latter system a group of, say, twenty persons agree each to contribute, say, one shilling per week for twenty weeks; and each week they draw lots to choose one of their number who becomes entitled to purchase goods to the value of twenty shillings. Thus, most members of the group can make their purchase in advance of completing payment for it, the least lucky among them can make his purchase immediately on completing his payments, while the distributing firm receives the cash for each order despatched. One member of the group acts as organizer, for which he receives a commission from the distributing firm.

This technique has now been successfully exploited over a number of years by Great Universal Stores, Ltd., which also operates retail stores of the variety chain type. In the past few years their methods have been imitated by the two largest firms of football pool promoters, who have used their large mailing lists to build up mail-order club trading organizations. One firm of football pool promoters during 1937 also started a chain of fixed-price variety stores. No statistics are available as to the extent of these enterprises, but there can be no doubt that during 1937 they expanded very considerably. (*See* MULTIPLE AND CHAIN STORES; FOOTBALL POOLS.) (D. BA., X.).

MAINE: *see* UNITED STATES OF AMERICA.

MAIZE: *see* GRAIN CROPS.

MALACCA: *see* STRAITS SETTLEMENTS.

MALARIA. Malaria continues as one of the most devastating diseases of man. Caused by a protozoan (one-celled animal) parasite which invades and destroys the red blood-cells, and transmitted by the bites of *anopheles* mosquitoes, its control is a dual problem of curing the patient and eradicating the mosquito. The disease has gradually receded from the cooler temperate zones, where agriculture, wealth, and education have improved conditions, but in the tropics it has been controlled only where intensive work has been done and large sums of money have been expended, such as in the Panama Canal Zone, the Pontine Marshes in Italy, and certain commercial plantations in southern Asia. In every malarious region there are natural periods of decline and increase of the disease. At the present time a period of decline in the United States is following a period of increase from 1932 to 1934. For this reason progress in control can be evaluated only after a period of years.

An enormous amount of research is being carried on in field stations and laboratories to learn more about the disease and about methods of treatment and prevention. The use of malaria in the treatment of patients suffering from syphilis of the brain has added much to our knowledge of the natural history of malaria. By employing infected mosquitoes to produce the disease, the dosage of infecting organisms, the incubation period, the course of the disease, the development of immunity, and the effectiveness of treatment have been carefully studied. It has been found that individuals develop immunity to the particular strain of parasite inoculated, but not to other strains, even of the same species, and that this immunity persists only a short time after the disease is cured. There is still a gap in our knowledge of the parasite between the time when it is injected by the mosquito and when it appears in the red blood-cells. It is now believed that the parasite probably enters the large phagocytic cells of the body, where it is protected during its multiplication, and that this accounts for the failure of quinine and other drugs to prevent infection.

Certain advances have been made in treatment. It is now considered advisable to treat the disease vigorously for a week or two, and to treat relapses as they occur, rather than to continue treatment for many weeks. Quinine is still considered the mainstay in treatment, but the new synthetic drug atebrin has proved to be about as efficient as quinine and is more pleasant to take. When either of these drugs is supplemented by small doses of another synthetic drug, plasmoquine, the incidence of relapses is greatly reduced. Other new synthetic drugs are being produced, some of which may prove to be more effective than those now in use.

In the control of malaria mosquitoes, the treatment of breeding-places is constantly receiving more attention. Drainage is the most useful procedure, and has accomplished much in the ' bonification ' project in the Pontine Marshes, and in the southern United States through labour furnished by the relief agencies of the Federal government. The Tennessee Valley Authority has developed scientific control of mosquito breeding along the shores of the lakes formed by the building of dams. The dusting of breeding-places with paris green is used increasingly where drainage is impractical. The top-minnow, *gambusia affinis*, although a disappointing agent in devouring mosquito larvae in its natural habitat in the United States, is proving of value in Europe, where the absence of its natural enemies allows it to multiply enormously.

The Malaria Commission of the League of Nations, by its studies in many countries, has shown that no one formula can be applied to control malaria, but that each region must be studied carefully before an effective control programme can be inaugurated. In the southern United States, full-time malaria units consisting of a physician, an engineer, and an entomologist are being added to the staffs of State health departments, and courses of study are being furnished for the training of such personnel. In the development of such programmes and in the combined results of many investigations lie the hope of reducing the incidence of malaria in the future. (H. E. M.)

MALAY STATES, FEDERATED, area 27,540 sq.m., population (1937) 1,961,397, are one of the three main subdivisions of British Malaya, the others being the Straits Settlements and the Unfederated Malay States (*qq.v.*). There are four Federated Malay States: Parak, Selangor, Negri Sembilan, and Pahang, of which the first three are on the west coast of the Malay Peninsula, while Pahang is on the east coast. Each State is administered under the advice of a resident, subject to the instructions of the high commissioner, who is also governor of the Straits Settlements. The seat of the Federal government is at Kuala Lumpur (Selangor), the largest town in the States, with a population of 127,124. The Federated Malay States contain 1,068m. of railway and 2,916m. of metalled roads.

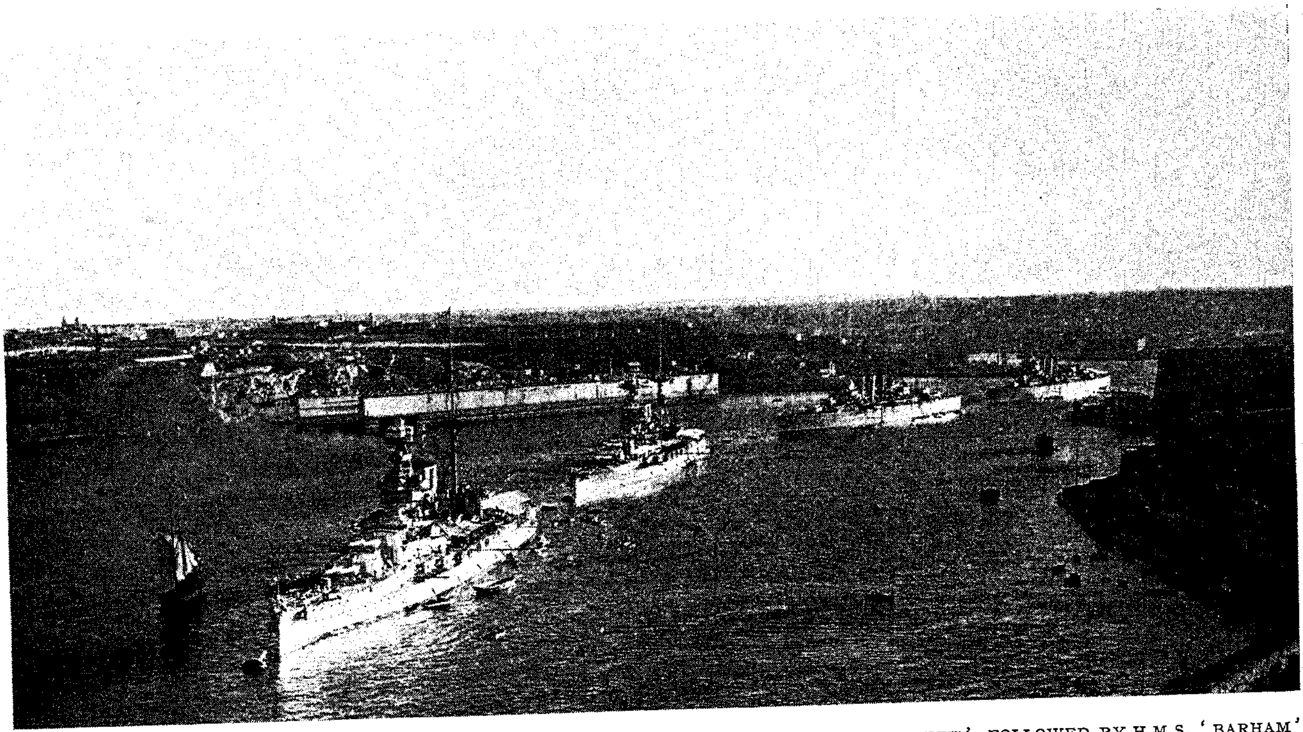
They constitute the immediate hinterland of the main ports of the Straits Settlements, Singapore, and Penang, and are rich in minerals and raw materials, especially tin and rubber. Other important products are coconuts, oil palms, rice, and pineapples ; and there are deposits of coal and gold. Chinese labour is largely employed in the tin mines, and there are many Indian workers on the rubber plantations. The Malays devote themselves more to hunting, fishing, and agriculture. The tin and rubber industries experienced great difficulties because of the precipitous fall of prices in 1931 and 1932. World restriction schemes, combined with the improvement in general economic conditions, brought about a gradual recovery, and in 1936 there was even a mild boom.

MALAY STATES, UNFEDERATED, area 24,728sq.m., population (1931) 1,600,895, is one of three main subdivisions of British Malaya (*see* articles, STRAITS SETTLEMENTS and MALAY STATES, FEDERATED). They consist of five States: Johore, Kedah, Perlis, Kelantan, and Trengannu, which are situated on the mainland of the Malay peninsula.

They are ruled by native sultans who have entered into treaty relations with the British Crown under which British advisers are appointed to the rulers. A number of British officials are employed in the service of the various States. Johore and Kedah are the most developed of the Unfederated States. There are Japanese iron concessions in Johore, which is on the mainland opposite Singapore, and in Trengannu.

MALLABY-DEELEY, SIR HARRY, 1st Bt., British dealer in real estate ; born Oct. 27, 1863 ; died at the Château des Fayères, near Cannes, Feb. 5, 1937. He added the ' Mallaby ' to his name in 1922, in which year he was created a baronet. He was Conservative M.P. for Harrow, 1910–18, and for East Willesden, 1918–22. His main activity, the negotiation of daring deals in large estates, did less to bring his name before the general public than did his promotion of a scheme for selling men's ready-made suits at a low price. He lost some £60,000 in this venture. In 1890 he married Joan Parson-Smith (*d.* 1933) and in 1935, Edith Shoebridge. A son, the 2nd baronet, was born to the former marriage.

MALTA, island in the Mediterranean, between Sicily and Libya, forming, with the neighbouring islands of Gozo and Comino, a British possession (since 1814), governed since 1936, when the Letters Patent of 1921 granting a Constitution were revoked, as a Crown Colony, by a governor aided by an executive council; legislation at present is effected by governor's ordinance. Capital, Valletta. Population (census, 1936), including Gozo, 262,165 ; area (with Gozo and Comino), 120sq.m. The



Charles E. Brown]
MALTA. A VIEW OF THE GRAND HARBOUR. IN THE FOREGROUND IS H.M.S. 'QUEEN ELIZABETH', FOLLOWED BY H.M.S. 'BARHAM', COUNTY CLASS CRUISERS

people are mainly of Semitic (Carthaginian) origin, and are Roman Catholics by religion ; there is a university, with about 180 students, 8 government higher schools, and over 150 day and evening elementary and 40 private schools : total expenditure on education, about £145,000 annually. The chief towns are Valletta (pop. 23,000) and the former capital, Civita Vecchia (pop., with the suburb of Rabat, 10,000). Maltese and English are the official languages.

Fears have been expressed in some quarters that Italian imperial aspirations may include the attempted annexation of Malta, and the recent Italian fortification of Pantellaria, the island between Gozo and Cape Bon, did not quiet such suspicions ; but Mussolini has strongly denied that Italy has any such intentions. Measures have been taken in recent years to reduce Italian influence in the island, and Maltese has (since 1934) taken the place of Italian as the language of Court proceedings.

Cultivation is high, corn crops, fruits, potatoes, and cotton being grown, and there is an extensive fishing industry. Manufactures include lace and cotton goods. Communication is mainly by motor omnibus ; Malta and Gozo are connected by a ferry service. Valletta has a magnificent harbour, and is an important port of call for vessels to and from the East.

Revenue and expenditure in 1936–37 were £1,209,000 and £1,251,000 respectively ; revenue is mainly from customs, fees, and stamp duties. Imports, in 1936, were valued at £3,440,000 and exports at £647,450. British coinage is in use, with a special bronze coin valued at one-third of a farthing.

Malta is the headquarters of the British Mediterranean fleet, and of the British Air Force in the Mediterranean, and has an important dockyard and arsenal. Some 3,500 British troops are stationed there.

MANCHESTER. Great Britain's fifth largest city, with an area of 27,256 acres, had at the census of 1931 a population of 766,738 which is estimated to have decreased by mid-1936 to 744,000, by reason of the tendency of the population, as in all Great Britain's larger cities, to remove to the suburban areas rapidly developing outside the city boundaries ; the population of what may be called 'Greater Manchester' being in the region of 1¼ millions. Several of the townships in this area have recently obtained charters as boroughs, among them Swinton and Pendlebury, Stratford, Sale, and in 1937 Altrincham. Although over 30m. from the sea, the Manchester Ship Canal makes the city one of England's principal ports ; it was used in 1937 by 7,674,682 tons of shipping. Contracts were placed at the end of the year for the electrification on the overhead system of the L.N.E.R. track from Manchester to Sheffield and Wath-upon-Dearne, Rotherham, a total of 75m., at a cost of over a million pounds—the two largest contracts in connexion with the scheme being placed with Manchester firms. Considerable extensions to the fine town hall were almost completed, and the new police headquarters, which claim to be among the best equipped and most up-to-date police buildings in the world, were brought into use.

MANCHUKUO (*Manchuria*), an empire, closely connected with Japan, located in north-eastern Asia, bounded on the north and east by Asiatic Russia, on the west by Asiatic Russia, outer Mongolia, and China proper, on the south-east by Korea. Its capital is Hsinking ; its ruler the Emperor K'ang Te.

Area and Population.—The area is 460,383sq.m. ; its population (June 30, 1936) 33,836,898, including about 700,000 Koreans, about 230,000 Japanese, about 50,000 white Russians, and some 3,500 foreigners of other nationalities, including 434 British, 459 Germans, and 226 Americans. Population of chief cities: Hsinking (1936), 303,301 ; Harbin (1936), 500,526 ; Mukden (1935), 388,841 ; Antung (1935), 154,575.

History.—Manchukuo contains the four former Chinese provinces of Fengtien, Kirin, Heilungkiang, and Jehol. Following the Russo-Japanese War of 1904–05 Japan took over and extended Russia's former rights of economic development in South Manchuria. Friction between the Japanese and Chinese authorities became aggravated after Chang Hsueh-liang, the governor of Manchuria, announced his allegiance to the nationalist régime at Nanking. Matters came to a head on Sept. 18, 1931, when Japanese troops, employing as a pretext the alleged explosion of a bomb on the South Manchuria railway, occupied Mukden, and quickly extended their occupation to the whole of Manchuria. Those groups in Manchuria which were willing to co-operate with the Japanese army selected Pu Yi, ex-Emperor of China, who had been living in retirement in Tientsin, as chief executive of the new State. Pu Yi assumed office as the Emperor K'ang Te on March 1, 1934. Meanwhile, Jehol had been added to the new State by a swift campaign of the Japanese troops in the spring of 1933. There is no parliament in Manchukuo. Administration is largely carried on by the State Council, which performs the functions of a cabinet, while a Privy Council also functions in an advisory capacity to the emperor. While the higher offices in the Manchukuo administration are fairly evenly divided between natives of Manchukuo and Japanese, the influence of Japan on all State affairs is overwhelmingly great. The Japanese ambassador to Manchukuo (General Kenkichi Uyeda) is also commander-in-chief of the Kwantung army, the Japanese army of occupation.

The League of Nations passed a resolution recommending non-recognition of Manchukuo ; and for six years after its establishment Japan and the central American republic of Salvador were the only countries to extend *de jure* recognition. Italy recognized Manchukuo on Nov. 30, 1937 ; and Germany, which maintains a special trade representative in Hsinking, did so on Feb. 20, 1938. The United States and British consulates in Mukden and Harbin maintain informal relations with the established authorities.

Trade and Communications.—Manchukuo's exports and imports in 1936 were valued at 602,758,989 and 691,889,273 yuan respectively. Japan supplied 507,216,093 yuan worth of imports and purchased 237,546,009 yuan worth of exports. Manchukuo has about 6,000m. of railway lines, of which about 2,000 were constructed after the creation of the new State. The principal towns are connected by a regular commercial air service.

Manchukuo's most important crop consists of soya beans. Kaoliang, millet, and wheat are also produced in substantial quantities, together with small amounts of rice, cotton, and tobacco. The Mongolian regions of the west and northwest are well adapted to cattle breeding. Manchukuo in 1935 produced 10,944,234 tons of coal and 1,576,178 tons of iron ore. The country is rich in timber and contains gold deposits, although the yield from the latter has thus far been slight. Manchukuo has an ambitious five-year plan, ending in 1940, for the development of its heavy industries and mining. With a view to promoting the inflow of new capital, a number of industrial enterprises were transferred from the South Manchuria Railway Company to the Japan Industry Company in the autumn of 1937.

Finances and Banking.—The unit of currency is the Manchukuo yuan, equivalent in value to the Japanese yen (1*s.* 2*d.*). The budget, which has been increasing in size, amounted to 248,098,760 yuan in 1937. The Central Bank of Manchukuo controls the note issue ; the Industrial Bank of Manchukuo specializes in crediting industrial enterprises ; and there are a number of other Japanese and Manchukuo banks.

Education and Religion.—In 1936, there were 12,884 schools in Manchukuo, with 667,967 students. Illiteracy is very high, especially in the country districts. The principal religions are Buddhism, Taoism, Mohammedanism, and Lamaism. There are about 100,000 Christians in the country.

Armed Forces.—Besides the Kwantung army, the size of which is kept secret, Manchukuo maintains an army of 80,000 and a flotilla of 11 gunboats. (W. H. Ch.)

MANDATES. The principal subject of interest during 1937 was the Palestine problem, to discuss which the Permanent Mandates Commission held an Extraordinary Session from July 30 to Aug. 18. For a report of the Commission's finding in this matter, *see* Palestine, § *History*. The United Kingdom government, while receiving authority to work out a tentative scheme, obtained no direct approval of the partition scheme, though the principle of partition was not unfavourably regarded.

The Mandates Commission also held two ordinary sessions during the year. In the first session, May 31–June 15, it examined the annual reports for 1936 of the Mandatory Powers for Togoland and the Cameroons, and Tanganyika (all British 'B' Mandates), Nauru and New Guinea (Australian 'C' Mandate), and S.W. Africa (S. African 'C' Mandate). In regard to the three 'B' Mandates in Africa, the Commission asked whether the Mandatory Power considered itself legally obliged to apply the rule of economic equality to imports from States non-members of the League, referring to the fact that neither under the terms of the Mandate nor under Article 22 of the Covenant could non-member States claim economic equality for their imports into a mandated territory, but only by virtue of agreements, as the Mandatory Power maintained, concluded with it. The Commission noted that the Mandatory Power had no intention in any of the three territories to introduce legislation which would discriminate against non-member States. In regard to the Cameroons and Togoland the Commission asked to be informed whether the exports of these territories enjoyed reciprocity under the commercial régime in force between them and certain non-member States.

In examining the report on S.W. Africa, the Commission referred again to its concern at some of the findings of the S.W. Africa Commission (June 1936), particularly in regard to the administration of the Mandate as a fifth province of the Union, which, it noted, was not contemplated, and in regard to which it had made legal reservations ; native education it considered to be inadequate.

At its 33rd session, Nov. 9–19, the Commission examined the annual reports for 1936 of the Mandatory Powers for Syria and the Lebanon (French 'A' Mandates), the Cameroons and Togoland (French 'B' Mandates), Ruanda-Urundi (Belgian 'B' Mandate), Western Samoa (New Zealand 'C' Mandate), and Pacific Islands (Japanese 'C' Mandates).

The accredited French representative from Syria and Lebanon (*q.v.*) made a statement on the various documents communicated to the Commission dealing with the signature in Sept. and Nov. 1936, of treaties between France and the two mandated territories, providing for the termination of the French Mandate in 1940. As the question of their emancipation did not arise until that date the Commission merely took note of the documents.

Lord Hailey (British), director of the African Research Survey, was appointed by the Council in Sept. 1936 in the place of Lord Lugard, who had resigned, and in May 1937 Governor Augustin Giraud (French) was appointed in the place of M. Manceron, deceased.

Bibliography.—*See* Report of the Secretary-General of the League of Nations ; Minutes and Reports of and to the Permanent Mandates Commission. (S. A. He.)

TABLE OF MANDATED TERRITORIES

Territory	Area	Date of Mandate	Mandatory Power	Former Title	Former Administration
South-West Africa, including Caprivi Zipfel, formerly part of Bechuanaland Protectorate [Walvis Bay .. 374 sq. miles.]	317,725 sq. miles	Dec. 17, 1920	Union of South Africa	German South-west Africa	The German Empire
Togo, comprising: (1) Togoland, *i.e.* western section, excluding the seaboard (2) Togo, *i.e.* eastern section and seaboard	13,040 sq. miles 20,070 sq. miles	July 20, 1922	Great Britain France	Togo	The German Empire
Cameroons, or Cameroun, comprising: (1) Cameroons adjoining Nigeria (2) Cameroons adjoining French Equatorial Africa	34,081 sq. miles 166,490 sq. miles	July 20, 1922	Great Britain France	Kamerun	The German Empire
Tanganyika **Ruanda-Urundi**	366,000 sq. miles 20,550 sq. miles	July 20, 1922	Great Britain Belgium	German East Africa	The German Empire
Palestine **Transjordan**	10,100 sq. miles 34,000 sq. miles	Sept. 29, 1923	Great Britain	Palestine Part of the Wilayat of Syria	The Ottoman Empire
New Guinea, Territory of, comprising: (1) North-eastern New Guinea (*i.e.* the northern section of south-east New Guinea) (2) Bismarck Archipelago (New Britain, New Ireland, the Admiralty Isles, etc.) (3) Certain of the Solomon Islands (Bougainville, Buka, etc.)	93,300 sq. miles	Dec. 17, 1920	Commonwealth of Australia	Kaiser Wilhelm's Land Bismarck Archipelago German Solomon Islands	The German Empire
Western Samoa, comprising Savaii, Upolu, etc.	1,133 sq. miles	Dec. 17 1920	New Zealand	German Samoan Islands	The German Empire
Nauru	5,396 acres	Dec. 17 1920	British Empire, as represented by Great Britain, Australia and New Zealand	Nauru	The German Empire
Pacific Islands North of the Equator, comprising: (1) The Marianne or Ladrone Islands (except Guam) (2) The Caroline Islands, comprising the Eastern Carolines and Western Carolines, together with Yap Island and Pelew (3) The Marshall Islands	245 sq. miles 380 sq. miles 160 sq. miles	Dec. 17 1920	Japan	No change	The German Empire

MAN, ISLE OF: *see* ISLE OF MAN.

MANITOBA. Mid-continent province of Canada, and the oldest and most easterly prairie province; area: 251,832sq.m. (27,055sq.m. water); population (census of Manitoba, June 1936), 711,214; capital, Winnipeg (215,814). Of the province's population, 310,927 are urban. British racial origin, 362,389; Ukrainian, 86,982; German, 52,450; French, 47,683; Polish, 35,136; Scandinavian, 21,504; Dutch, 25,521; others, 66,120.

History.—On July 5, Manitoba signed an agreement with the Federal government, whereby the latter contributes $100,000 and the provincial ministry an equal sum towards the special training in forestry, industry, and domestic service for unemployed young men and women. A drought of unprecedented dimensions in the three prairie provinces in the summer of 1937 engaged the serious attention of the Federal authorities; and rust infection further damaged the wheat crop of northern Manitoba, sometimes as much as 20 to 50 per cent. The present legislature of Manitoba consists of 55 members, with the government headed by Hon. John Bracken, premier since 1922. The lieutenant-governor is Hon. William J. Tupper. Manitoba elects 17 members to the House of Commons of Canada, and has 6 representatives in the Senate.

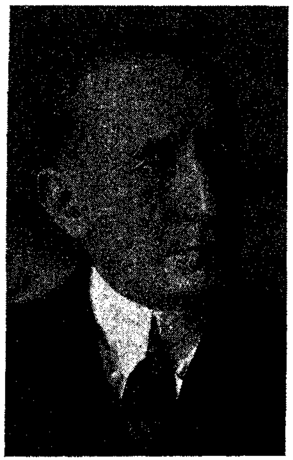
Education.—Public, elementary, and secondary schools are maintained by general taxation, with the Manitoba University, including a faculty of agriculture, and affiliated colleges, providing for higher education. There are also several other colleges and schools.

Public Welfare.—A provincial department of health and public welfare administers the following statutory services: child welfare, hospital aid, marriage, mental diseases, municipal hospitals, public health, venereal diseases, sanatorium, and vital statistics. The government maintains three public health institutions for mental diseases, juvenile courts, gaols; there are also many government-assisted and private charity and relief services.

Banking and Finance.—Winnipeg, the financial centre of western Canada, is the western headquarters of 8 of 12 Canadian banks, and of insurance, mortgage, and financial institutions. For 12 years to 1932, savings offices were maintained by the government.

Agriculture, Manufacture, and Mineral Production.—The gross total value of products of manufacturing industry in 1935 was estimated at approximately $118 millions, and the output has been maintained since, with an increasing production of minerals, totalling $11,500,000 in 1936. Furs, fisheries, and forests also yield important returns. The province has an abundance of low-cost electrical power, developed at several points on the Winnipeg river. The railway mileage is: Canadian Pacific railway 2,697, and Canadian National 2,985, the latter including the 510m. of line from The Pas to Churchill on Hudson Bay, whose coast for 400m. forms part of the northern boundary of Manitoba. There are 4,200m. of government-maintained provincial highways.

MARCONI, GUGLIELMO MARCONI, Marchese, Italian inventor; born at Bologna, April 25, 1874; died near the Piazza di Spagna, July 20, 1937. For details of his life *see* the *Ency. Brit.*, vol. 14, pp. 869–70. Senator Marconi's successful experiments with short-wave wireless transmission at Poldhu during 1923–24 led to the British government's acceptance of his short-wave beam system for imperial communications. In 1931 and 1934 the Marchese achieved successful results with still shorter waves, of less than a metre in length. Marconi joined the Fascist Party in 1932, and became a firm friend of Signor Mussolini, who appointed him a member of the Fascist Grand Council; and in 1930, though senators were not admissible to the honour, he was made a member of the Italian Royal Academy, of which he subsequently became president. Marconi was created a marchese in 1929; and among his other honours were the Order of St. Maurice and St. Lazarus, the Civil Order of Savoy, the Grand Cross of the Order of the Crown of Italy, and an honorary G.C.V.O. In 1934 he was elected Rector of St. Andrew's University, but had not, at the time of his death, been installed in that office.



Elliott & Fry]

THE LATE SENATOR G. MARCONI

MARINE BIOLOGY. There is no single medium which acts as a clearing-house for the reports of the activities and investigations of more than 240 marine institutions of the world. Probably one of the most interesting developments, however, concerns the continued use of the 'bathysphere' in the explorations of the superficial and deeper recesses of the sea. In a comparatively small volume of water about eight miles wide and about half a mile deep, off the Bermuda Islands, scientists have already found representatives of about one-third of all the now known species of sea life. The principle of the 'bathysphere' has been pronounced 'the greatest invention since the diving suit'.

Interesting also is the exploration of the polar seas by the expeditions of the Russian government; the establishment of the polar station on the ice-floe; and the building of two new marine biological stations, by the U.S.S.R. Academy of Sciences. One of these is at Murmansk, the other at Dalnye-Zelenets bay, east of Kola bay. These two stations are designed to be among the finest of their kind in the world. Likewise, the British government has established a new Bermuda oceanographical station, the central problem being the study of the pulses of the Gulf stream in relation to marine life.

Two Pacific expeditions were completed during 1937. One of these, sponsored by the American Museum of Natural History, spent four months in marine collecting and research off South America. A similar interval was spent by the sixth Hancock Pacific Expedition off the coast of Central America. Rare and unknown specimens have been distributed to various institutions of the United States. A long series of sea explorations known as the Marion and General Greene Expeditions, to Davis Strait and Labrador sea, under the direction of the United States Coast Guard, has just been completed.

A most valuable scientific contribution during the year was a volume published by the National Academy of Sciences in Washington, D.C., on the international aspects of oceanography, which gives, not only a review of the physical aspects of the sea, but includes a complete catalogue of all marine biological stations. It reviews their history, situation, organization, scope of programme, and provision for publication as well as other useful information. A twenty-five-year study on salinity and temperatures of the English Channel has been released by the Ministry of Agriculture and Fisheries of Great Britain, while the last report of the Permanent Council for the Exploration of the Sea includes studies in rheotaxis, geotaxis, phototaxis, habitats, and nutrition.

Experimental techniques promise to influence contemporary biological thought profoundly. In experimental embryology it is found that sea-urchin eggs when subjected to high centrifugal force (10,000X in sucrose solution) tend to break into nucleated and non-nucleated halves. The non-nucleated halves, when treated with parthenogenic agents, undergo cleavage and develop into blastules.

Progress was also made in ecology on the colour adaptive mechanisms in certain marine fishes. In a series of experiments it was found that fishes with the most perfect adaptive mechanisms suffered least from predatory foes when placed upon unfavourable backgrounds. Thus the 'protective coloration hypothesis' as an operative mechanism in nature has a champion in fact. Recent research shows that bacteria play an important rôle in the nutrition of marine animals. The bacteria utilize the dissolved organic matter of the sea-water and then are ingested by other organisms.

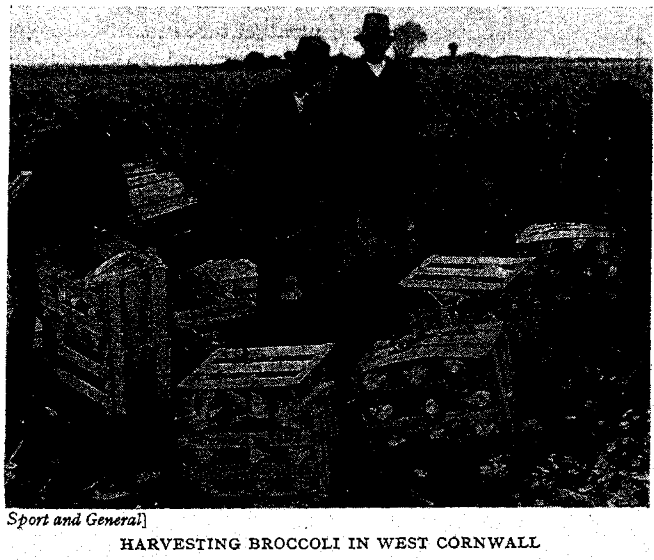
MARINE INSURANCE. In the marine insurance market by far the most important event of 1937 was the agreement made by the marine insurance companies and Lloyd's underwriters in December, confining the cover of the marine war risk policy on cargo to the period during which the merchandise is actually in the vessel in which it is carried overseas, the customary period of cover on shore prior to loading and after discharge being completely eliminated. The principle underlying the agreement is that underwriters are not justified in accepting commitments which might involve both insurers and assured in ruin, for, to quote the official announcement: 'Under modern conditions of warfare such widespread destruction of property is possible that the accumulated cargo values at certain ports would create liabilities which even the whole marine insurance market might well be unable to meet'.

During 1936 Lord Merrivale, Mr. Justice MacKinnon, and Mr. Justice Branson had each uttered criticisms of the system which permitted ships to be insured for amounts far in excess of their actual values. A Board of Trade committee appointed to inquire into the system of valuing ships for insurance in the light of these judicial criticisms issued a report early in 1937, but the report stated that the matter was one not of public urgency and that the judicial strictures were directed mainly against theoretical possibilities. Nevertheless the committee recommended that certain market practices aimed at restricting the amounts for which ships are insured against total loss should be made compulsory by law, but from question and answer in Parliament it would seem that the Board of Trade would rather that underwriters adopted these recommendations voluntarily than that there should be legislation of a compulsory nature.

Moreover, by the time the report was issued, the circumstances which had provoked judicial criticism had disappeared. The value of tonnage had increased with improving trade to such an extent that many ships were under-insured rather than over-insured. This development also led to a revival of the hull underwriting agreement which from time to time governed the rating and valuation of ships during the past 20 years. The last previous agreement had lapsed in Jan. 1935, since when there had been a steady decline in premiums and a steady rise in the cost of ship repairs. Realizing that to continue on the existing basis would involve a heavy trading loss, underwriters took co-operative action and by June had reached the most comprehensive agreement ever made. It included, with minor exceptions, all classes of business and vessels of all flags, and it aimed at obtaining a minimum increase of 30 per cent. in premiums. Further, all foreign underwriting associations were invited to support the agreement, and while it was inevitable that complete international uniformity could not be obtained on so complex and difficult a matter, a very large measure of agreement on the fundamental principle has been obtained on a world-wide basis.

Among other important developments of 1937 it may be mentioned that a joint rating committee of company and Lloyd's underwriters has continued to fix war-risk rates which practically govern the world market, and that underwriters have adopted a 'warranty' which prohibits an insured ship from carrying coal from Poland except on short European voyages, the reason for this being that Polish coal had proved liable to spontaneous combustion on long voyages and has caused serious losses by fire. (D. K.-P.)

MARKET GARDENING. Market gardening in Great Britain has been changing in recent years and tending to become two industries. The commoner types of vegetables—brussels sprouts, cabbages, peas, carrots, parsnips, etc.—are now grown largely on farms on mass production lines; whereas the salads, seakale, and finer vegetables are grown by very intensive methods by different people. This change continued during 1937. By the intensive method glass frames are used to produce early salads, radishes, carrots, and cauliflowers on lines similar to the methods initiated by the growers in Holland. The frame consists of a large pane of glass to trap the heat from the sun, and the plants are grown on land not heated by artificial methods.


Sport and General]
HARVESTING BROCCOLI IN WEST CORNWALL

Progress has also been made in installing irrigation systems to give vegetables growing in the open artificial rain when needed. By these methods several crops are produced on the same land each year.

The intensive cultivator keeps no animals, and in this mechanical age has difficulty in securing sufficient dung to keep 'humus' in the soil, and it has become realized that, by using artificial fertilizers alone, the fertility cannot be maintained. Much progress was made during 1937 in turning 'waste vegetable matter' into 'humus', either by the Indorè process or by using cyanamide to start bacterial action in breaking down the celluloses. Composting has now become an established practice on the intensive holdings. Alternatively, the farmer grows one crop of brussels sprouts, cabbage, or broccoli per year on land in a farm rotation, and relies on cheap methods of production to produce a crop. Progress in vegetable production on farms has been made notably in East Anglia (Norfolk, Suffolk, Cambridge, and Lincoln), which is now building up a large vegetable industry.

Improved types of vegetables have been introduced by the research scientists and by the seed firms. The Cheshunt Research Station has introduced two varieties of lettuce for production under glass: the *Cheshunt Early Giant* (for heated glasshouses) and *Cheshunt Globe* for culture in frames. The Seale Hayne College has introduced stocks of winter broccoli for use in Cornwall and Devon, where broccoli production has much expanded. In 1937 approximately 40,000 tons of broccoli from Cornwall were marketed. The quality and method of packing have reached a higher standard. The Horticultural Station at Cambridge has introduced new stocks of brussels sprouts, cauliflowers, and onions, and made arrangements for these to be grown for distribution through the seed trade.

Methods of grading and packing of market vegetables have improved, and more growers have become registered packers under the National Mark Scheme which is administered by the Ministry of Agriculture. The mark can only be used on produce graded to national standards.

There was a severe drought in England in the early months of 1937, and many growers were unable to plant their full programme to vegetables, and in consequence the the upward trend in the area devoted to vegetables recorded in previous years has not been maintained. The acreage to most kinds of vegetables in 1937 shows a decline, but such a decline is thought to be temporary. (H. V. T.)

MARKETING BOARDS IN GREAT BRITAIN.

Constitution and Purpose.—Agricultural marketing boards are bodies set up by producers of agricultural products with the object of securing the advantages of large-scale organization. They derive their status in law and their functions from schemes framed and submitted under the Agricultural Marketing Acts, 1931 to 1933. The initiative in the submission of schemes must come from persons substantially representative of the producers of the product concerned. Every scheme requires the approval of the appropriate minister, who must give opportunity for objections and may modify the scheme, and also of Parliament. When thus approved, a scheme comes fully into force only if, in the subsequent poll, votes representing two-thirds of the producers and two-thirds of the quantity of the product are given in favour of it.

Public safeguards are provided in the form of (i) *Consumers' Committees*, whose duty it is to consider and report to the minister on the effect of schemes on consumers and on any complaint as to the effect of schemes on consumers; (ii) *Committees of Investigation*, whose duty it is to consider and report on matters referred to them by the minister; these may be reports by Consumers' Committees or complaints made to the minister by persons other than consumers. After an adverse report by a Committee of Investigation, the minister may revoke a scheme, amend it, or require the Board to rectify the matter in complaint. In the case of revocation, the minister's order must be approved by each House of Parliament; in the other two cases, the order must be laid before each House and may be annulled by either.

A further public safeguard lies in the power of the minister, on his own initiative, if he is satisfied that any provision of a scheme or any act or omission of a board is contrary to the interest of consumers of the regulated product or is contrary to the interest of a substantial number of persons affected by the scheme and is not in the public interest, to make an order revoking the scheme, subject to the approval of each House of Parliament.

Within this general framework, schemes differ according to the selection made by the promoters from the variety of powers with which, under the Acts, a board may be endowed. The selection is naturally governed by the circumstances obtaining in the case of each product. A board may, for instance, be solely a trading body, or it may exercise only regulatory functions; or, again, it may be a combination of the two types. All-embracing, producer-controlled organizations of this kind, authorized under statute to regulate the marketing activities of their constituents, are new to British agriculture. They may be said to carry to a logical conclusion the voluntary movement for the co-operative marketing and standardization of agricultural products which has gone far in other countries, and, for some commodities, had made steady progress here. They reflect, too, the general tendency towards regulation in economic affairs. It may be noted that under the Agricultural Marketing Act, 1933, imports may be regulated in conjunction with a marketing scheme.

Operation of Acts.—Eight schemes are in operation in Great Britain. They are:

Commodity	Area of Scheme	When brought fully into operation.
Hops	England	Sept. 6, 1932
Pigs	Great Britain	Sept. 9, 1933
Bacon	Great Britain	Sept. 9, 1933
Milk	England	Oct. 6, 1933
Milk	Scotland (south of the Grampians)	Dec. 1, 1933
Potatoes	Great Britain	Mar. 9, 1934
Milk	Scotland (counties of Aberdeen, and Kincardine) . . .	Aug. 1, 1934
Milk	Scotland (counties of Inverness, Nairn, Ross and Cromarty, Sutherland, and Caithness) .	Oct. 1, 1934

The full story of the operations of these schemes is told in the series of annual reports (*see* bibliography below) which Ministers are required to lay before Parliament, but a brief description of the chief features of some of the schemes will be of interest.

The Hops Scheme is an example of the trading type. All hops are sold through the Hops Board, and the proceeds are pooled and divided among growers according to quotas allotted to them on the basis of past performance. The stability which the scheme has introduced has been assisted by a five-year price and supply agreement between the Board and the brewers.

The Potato Scheme, on the other hand, is regulatory in character. Its purpose is to stabilize prices. In order to assist the adjustment of supply to demand, each producer is allotted a basic acreage, and is liable for a non-recurring payment of £5 per acre if he grows potatoes in excess of that acreage. In addition, the Board determines, from time to time, the minimum size of potatoes that may be sold. The Board has paid special attention to the development of an effective market intelligence service.

The Pigs Marketing Scheme and **the Bacon Marketing Scheme,** together with a **Bacon Development Scheme** under the Act of 1933, are part of one and the same plan, the main purpose of which is to adjust an expanding home production to the requirements of a market which is quantitatively regulated under the Act of 1933. The schemes recognize that a market for a manufactured product such as bacon cannot be built up on fluctuating supplies of raw material. The schemes therefore encourage the sale of pigs to bacon curers on annual contracts at prices so varied as to induce the production of the qualities required in level quantities throughout the year. Since the schemes have been in operation, the output of home-produced bacon has doubled. Owing to the sudden increase in the cost of animal feeding-stuffs, no contracts were operative in 1937, but new contracts are expected to be issued some time in 1938, when the industry should make further progress.

The Milk Scheme of England and Wales, with its 150,000 registered producers and its annual turnover of over £40 millions, on wholesale account, is the giant among the marketing schemes. The pivotal function of the Board is the prescription of the terms on which milk may be sold. It is a party to all wholesale contracts, and the money received for milk sold under such contracts is payable to the Board by the buyers. The central feature of the scheme is the payment of these moneys into regional pools, adjustments being made between pools to even up returns. The reason for the pooling system lies in the wide disparity in the prices received for liquid and manufacturing milk, and the effect of the system is to give producers an average price for their milk irrespective of the purpose for which it is used. Other activities of the Board cover a wide field and include the diversion of supplies into the most remunerative markets; the encouragement of the production of quality milk by paying premiums out of pool funds; co-operation with the State in the supply of milk to children in elementary and other grant-aided schools at reduced prices; and assistance to research and publicity.

The annual value of the products covered by marketing schemes is in the neighbourhood of £100 millions, or over one-third of the total annual value of home agricultural produce. No scheme is yet six years old, and marketing schemes are still, to some extent, to be regarded as experimental; but whatever changes lie in the future, the principle of all-inclusive organization is likely to endure.

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MARQUIS, DONALD ROBERT PERRY. American humorist, poet and playwright; born July 29, 1878; died Dec. 29, 1937. He was most widely known as creator of archy the cockroach, and mehitable the cat. These famous companions of the lower case, inaugurated as fillers for a daily column, surpassed even the successful play, *The Old Soak*, in popular favour. Marquis's best-known poems and plays are listed in the *Ency. Brit.*, vol. 14, p. 939. Unfortunately, his work came to an abrupt halt in 1932, when a brain haemorrhage left him totally blind for a time. Another attack, in Feb. 1936, rendered him a helpless invalid.

MARRIAGE STATISTICS. Unlike fertility and mortality, nuptiality has not shown a marked trend in the course of the last 50 years. But the number of marriages has varied a great deal. Prior to the World War, it was in England well below 300,000 in every single year. It jumped to 361,000 in 1915, and after a drop in the following years reached the record figure of 380,000 in 1920. It was again below 300,000 from 1922 to 1926, but has been higher ever since, and was in 1936 again nearly as large as in 1915. The fluctuations are much greater still in countries which encourage marriages through financial help. Germany, who between Aug. 1, 1933, and Sept. 30, 1937, granted loans to 822,000 couples, witnessed a rise in the number of marriages from 517,000 in 1932 to 740,000 in 1934, followed by a decrease to 610,000 in 1936. Italy, who in 1937 bestowed premiums on working-class couples marrying on specific days, raised the number of marriages in the first 10 months from 227,524 in 1936 to 299,226 in 1937.

The most common method of measuring nuptiality is to compute the yearly marriage rate, *i.e.* the rate of marriages per 1,000 inhabitants. But this rate is quite misleading, since it is calculated without regard to the proportion of marriageable people within the total population. According to the censuses taken in 1926, Bulgaria, with 5,479,000 inhabitants, had only 641,000 unmarried people over 20 years of age, while the Irish Free State, with 2,972,000 inhabitants, had as many as 995,000. It is obvious that a comparison of the 'marriage-rates' of these two countries would convey an utterly wrong picture of the chances of marrying. The best method of measuring nuptiality is to compute a nuptiality table. Such a table shows how many out of every 1,000 boys or girls reaching marriageable age actually get married in the course of their lives, provided they do not die prematurely. Thus a table for England 1930–32 shows that, according to the nuptiality prevailing in these years, one-half of the girls reaching the age of 16 are married at 25, three-quarters at 32, four-fifths at 39, while about one-sixth never marry at all.

A more simple method of ascertaining roughly the cumulative effects of marriages in the past is to compute the proportion of single people at various ages.

The mean age at marriage of bachelors rose in England

SINGLE PERSONS PER 1,000 OF TOTAL POPULATION BY AGE GROUPS

Country	Date	Males						Females					
		15–19 Years	20–24 Years	25–29 Years	30–39 Years	40–49 Years	50–59 Years	15–19 Years	20–24 Years	25–29 Years	30–39 Years	40–49 Years	50–59 Years
AUSTRIA	Mar. 22, 1934	999	946	681	299	132	106	984	811	507	275	189	157
BELGIUM	Dec. 31, 1930	995	801	381	154	107	107	959	595	270	161	137	134
BULGARIA	Dec. 31, 1926	935	507	179	69	27	20	877	323	81	28	13	9
CZECHOSLOVAKIA	Dec. 1, 1930	999	880	430	144	67	52	953	619	303	170	109	85
DENMARK	Nov. 5, 1935	999	889	506	204	101	85	978	684	350	209	163	152
ENGLAND AND WALES	Apr. 27, 1931	997	861	471	180	112	106	982	742	406	228	175	158
SCOTLAND	Apr. 27, 1931	996	882	564	257	167	156	977	770	495	294	258	209
NORTHERN IRELAND	Apr. 18, 1926	998	903	616	376	266	221	983	798	524	343	262	249
IRISH FREE STATE	Apr. 18, 1926	999	960	798	562	368	280	993	870	618	371	253	235
ESTONIA	Mar. 1, 1934	998	920	605	280	142	105	972	732	442	267	185	161
FINLAND	Dec. 31, 1930	997	897	597	359	291	210	979	763	495	349	281	212
FRANCE	Mar. 8, 1931	994	565		160	97	88	927	373		159	117	108
GERMANY	Dec. 31, 1933	999	899	537	184	67	57	976	738	389	205	134	103
GREECE	May 15, 1928	971	829	516	215	88	62	926	558	255	82	41	35
HOLLAND	Dec. 31, 1930	998	896	493	173	111	106	984	754	380	196	158	144
HUNGARY	Dec. 31, 1930	993	811	392	138	63	44	909	516	244	131	74	55
ITALY	Apr. 21, 1931	995	884	488	189	107	89	959	668	351	206	138	115
LATVIA	Feb. 12, 1935	996	897	585	275	127	96	967	725	454	274	182	138
NORWAY	Dec. 1, 1930	999	935	650	300	164	121	989	813	516	303	235	207
PORTUGAL	Dec. 1, 1930	994	834	440	203	128	102	968	687	393	242	184	162
SWEDEN	Dec. 31, 1934	1,000	941	673	342	184	148	988	793	499	309	238	218
SWITZERLAND	Dec. 1, 1930	999	931	597	252	153	129	993	824	480	273	199	170
U.S.S.R.	Dec. 17, 1926	949	510	175	57	27	21	861	277	89	48	37	35
YUGOSLAVIA	Apr. 1, 1931	917	605	266	109	56	42	818	350	149	85	53	41
EGYPT	Feb. 18, 1927	959	474		78	28	19	627	85		19	14	12
INDIA	Feb. 26, 1931	553	361	142	74	43	34	149	62	24	17	12	10
JAPAN	Oct. 1, 1925	982	724	250	54	21	14	859	296	78	29	18	13
CANADA	June 1, 1931	996	855	521	243	148	129	949	631	324	162	108	106
UNITED STATES	Apr. 1, 1930	980	708	367	182	125	107	868	460	217	118	93	91
AUSTRALIA	June 30, 1933	996	872	561	272	156	151	961	688	376	198	148	148
NEW ZEALAND	Apr. 20, 1926	996	879	526	245	160	153	975	702	351	196	144	140

from 26·08 years in 1885 to 27·56 years in 1912–13. Since 1919 it oscillated from 27·30 (1931) to 27·54 (1922). The mean age at marriage of spinsters rose from 24·58 years in 1885 to 25·85 in 1912. Since 1919 it oscillated from 25·47 (1931) to 25·59 (1924–25, 1935). (R. R. K.)

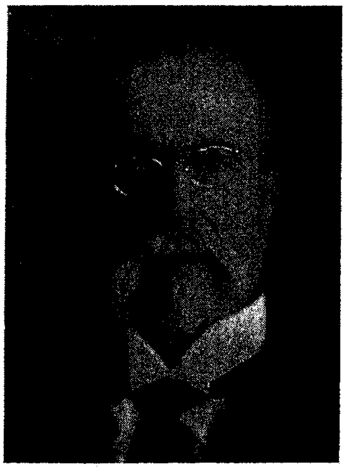
MARTIN-HARVEY, SIR JOHN (1863–), British actor and manager, made his first appearance in 1881. In the following year he went to Irving, at the Lyceum, and remained with him till 1897; in Feb. 1899 he returned to the Lyceum as manager, and there produced his unequalled success, *The Only Way*. He has played many Shakespearian parts, including Hamlet, Richard III, Henry V, and Petruchio; also Oedipus, in the 1912 production of *Oedipus Rex*. In Jan. 1937 his health gave cause for some anxiety, but later in the year he was able to lecture at Bath on Sarah Siddons, and in October it was announced that he would produce at Norwich Müller's *Tuberin 5*, himself playing the doctor who has discovered a cure for tuberculosis.

Sir John's knighthood was awarded in 1921; in 1933 he published his autobiography.

MARTINIQUE, French West Indian colony; language, French; capital, Fort-de-France; governor, I. B. Alberti. The area is 380sq.m.; the population by the 1936 census was 234,505. The chief cities are: Fort-de-France, the capital (pop. 48,395); Le Lamentin (pop. 16,303). Martinique is administered by an appointed governor and an elected council, and has representation in the French Parliament. During 1937, French laws of 1936 concerning agricultural moratoriums and arbitration of labour disputes were extended to Martinique by decree. Fort-de-France has direct steamship connexions with France and with other parts of the West Indies, and air connexions with New York. Martinique has 600km. of motor roads, with 200km. of railway, for goods only. Imports (155,632,000 francs in 1936, France supplying 66 per cent.) are principally foodstuffs, tobacco, lumber, and textiles. Exports (191,143,000 francs in 1936) are sugar, rum, and bananas, practically all to France. Approximately 45,000 acres of sugar cane is cultivated. Refining is done by 19 sugar-mills, capitalized at 50 million francs. There are two rum distilleries. The monetary unit is the French franc. Martinique has 118 primary schools, and several secondary and technical schools, with 12,000 students. Fort-de-France is the French West Indian naval base and military headquarters.

MARYLAND: *see* UNITED STATES OF AMERICA.

MASARYK, THOMAS GARRIGUE, Czechoslovak philosopher and statesman; born at Hodonin, Moravia, March 7, 1850; died at Castile Lány, near Prague, Sept. 14, 1937. For details of his life and career, *see* the *Ency. Brit.*, vol. 15, pp. 8–10. In May 1934 he was re-elected president of Czechoslovakia, but thereafter his health began to fail, and in Dec. 1935 he resigned. Among his later publications were: *The Way of Democracy, I–II* (1933–34); and his autobiography, *President Masaryk tells his Story* (recounted by Karel Capek, 1934).


Vandyk]

THE LATE PRESIDENT MASARYK

MASEFIELD, JOHN, O.M. (1878–), British poet and novelist. *See* the *Ency. Brit.*, vol. 15, pp. 10–11. As Poet Laureate, to which office he was appointed in 1930, one of his principal works was *A Prayer for the King's Reign* published in April 1937. In July, he succeeded Sir James Barrie (*q.v.*) as president of the Incorporated Society of Authors, Playwrights, and Composers, and was responsible for both the writing and the production, at Oxford, of *The Empress of Rome*, an adaptation of a mediaeval French miracle-play. Late in 1937, his new novel, *A Square Peg*, sequel to *Eggs and Baker* (1936), was published, and was followed by a long poem, *The Country Scene*. Masefield was awarded the Order of Merit in 1935.

Lafayette]

MR. JOHN MASEFIELD

MASOOD, SIR SYED ROSS, Indian Moslem educationist; born Feb. 15, 1889; died at Bhopal, July 30, 1937. He was educated at the Aligarh University (then the Mohammedan Anglo-Oriental College) and New College, Oxford, and was called to the Bar by the Middle Temple. After being headmaster of the Patna Collegiate School, and Professor of History at the Ravenshaw College, Cuttack, he was, from 1916 to 1928, Director of Public Instruction in Hyderabad. For his services in this capacity the Nizam conferred upon him the title of Nawab Masood Jung Bahadur. In 1929 he became Vice-Chancellor of the Aligarh University. He was knighted in 1933, and from 1934 till his death was minister of education on the executive council of Bhopal. His chief publications were *Japan and its Educational System* and (in Urdu) *Intikhab-i-Zarrin.*

MASSACHUSETTS: *see* UNITED STATES OF AMERICA.

MATERNITY WELFARE CENTRES: *see* CHILD WELFARE.

MATHEMATICS. In surveying the development of mathematics during a short period of one year, it is usually easier to point out general trends rather than to pick out separate facts. The year 1937 presented an exception, since a decisive step was made towards a solution of one of the most famous and difficult problems of Number Theory, known as the Goldbach Problem. In a letter written to Euler in 1742, Goldbach conjectured that every even number can be represented as a sum of two primes. The problem remained intractable until 1923, when the Englishmen Hardy and Littlewood, assuming the validity of an unproved conjecture of Riemann, proved that every sufficiently large odd number can be represented as a sum of three odd primes. In 1930, the Russian Schnierelmann proved directly that every integer number can be represented as a sum of no more than 800,000 primes. This result was characterized by Landau as one of the greatest successes in Number Theory. The number 800,000 was lowered to 2,208 by the Russian Romanoff in 1935, to 71 by the Germans Heilbronn, Landau, and Scherk in 1936, and to 67 by the Italian Ricci in 1937. Returning to the analytic method of Hardy and Littlewood, and combining it with a powerful new method of his own, Vinogradov, a Russian, proved the above theorem of Hardy and Littlewood, without any further assumptions. The exposition of Vinogradov's method, together with applications to other important problems of Number Theory, was published in a significant paper in the *Travaux de l'Institut Mathématique Stekloff* of the Russian Academy of Sciences, vol. x, 1937. Vinogradov's work represented a triumph of analytic Number Theory, even more significant than the classical work of Hadamard, Vallée-Poussin, and Mangoldt concerning the distribution of primes.

Another important progress in additive Number Theory was due to Rademacher, an American, who gave an expression, in form of a convergent series, for the number of partitions p(n) of an integer n into a sum of integers, the two partitions being considered as the same, if they differ only by the order of terms. (*Proc. London Math. Soc.*, Ser. 2, 43, pp. 241–54.)

A notable trend in the recent development of mathematics consisted in a fusion of fields which heretofore appeared as widely separated. Thus the methods of abstract algebra seem to acquire more and more importance in investigations, not only in algebra proper, but also in analysis and geometry. The situation is illustrated best of all by the creation of a new system of geometry, which von Neumann, an American, calls continuous geometry. In this geometry the basic elements are not points of the classical geometry, but linear sets. To each linear set L of von Neumann's geometry, there corresponds a numerical function D(L) called dimension of the set L, which coincides with the usual dimension of L in the case of classical geometry. But in the general continuous geometry D(L) can assume all values, not necessarily integral, between O and a certain constant cO. A series of lectures on this subject was delivered at Pennsylvania State college in the United States, Sept. 7–10, 1937, and will be published in the *Colloquium Publications* of the American Mathematical Society.

The Theory of Probabilities is a branch of mathematics which has developed particularly rapidly during the recent years. Accounts of this development are given in two books, Cramér's *Random Variables and Probability Distribution*, Cambridge, and P. Lévy's *Theorie de l'Addition des Variables Aléatoires*, Paris.

Mathematicians are beginning to realize more and more the importance of co-operation and mutual help in their work, as is shown by the number of international and national conferences in recent years. Such were the conference on Tensor Differential Geometry (Moscow Univ., May 17–23, 1934) of which the report appeared in 1937, the conference on Topology (Moscow Univ., Sept. 4–10, 1935), and the conference on the Theory of Probabilities (Univ. of Geneva, Oct. 11–16, 1937). A symposium on the Calculus of Variations (Notre Dame Univ., April 7–8) should also be mentioned. Among popular works appearing in 1937 may be noted the excellent essay, *Men of Mathematics*, by Professor E. T. Bell, of the California Institute of Technology.

(J. D. T.)

MATRIMONIAL CAUSES ACT: *see* DIVORCE.

MATTER, STRUCTURE OF. Fundamental for modern views on the structure of matter are the discoveries of the structural units of the atom, the electron, and the atomic nucleus. As is explained in greater detail in the article 'Atom' in the *Ency. Brit.*, vol. 2, pp. 642–48 (referred to in the following as A), the nuclear model of the atom due to Lord Rutherford allows above all a simple discrimination between such properties of matter, including all ordinary physical and chemical effects, which depend primarily upon the extra-nuclear electron configuration of the atom and those which essentially involve changes of the atomic nuclei themselves, as manifested in the phenomena of natural radioactivity or of artificial nuclear transmutations initiated by impact of material particles or by radiation, the continued study of which has given such remarkable results in the past few years.

As regards the account of the former properties of matter on the basis of the nuclear atom, the incorporation of the quantum of action discovered by Planck into the mechanical treatment of the electron configuration has offered a decisive clue to the understanding of the intrinsic stability of those configurations. In particular, it has led, through the study of optical and high-frequency spectra of the elements, to a classification of the binding of the electrons in the normal state of all atoms by means of so-called quantum numbers (A, Table II), which has given a complete explanation of the relationships between the elements, as expressed in the well-known periodic table (A, Table I). The gradual development of proper methods of quantum mechanics, including the general formulation of the exclusion principle for electron systems (A, p. 648), has further allowed a complete understanding of the different types of bindings of atoms into molecules, which in the case of the so-called polar bonds are ascribed to the electrostatic forces between ions in their normal state, and in the case of homopolar bonds, are ascribed to the sharing of a pair of electrons of opposite spins in the same quantum state by two atoms.

Great progress has also been achieved in recent years in our understanding of the structure of matter in bulk, especially as regards the crystalline state. Not only has the analysis of the stationary states of crystals led to a comprehension of the optical properties of solids and of the variation of their specific heats at low temperatures, but it has even been possible to derive, on the basis of quantum mechanics, approximate expressions for the cohesive forces between atoms and molecules responsible for the elastic properties of matter in its different states of aggregation. Moreover, a general theory of the typical properties of the metallic state has been obtained by a quantum mechanical treatment of the ensemble of more or less loosely bound electrons in metals. Such a treatment, in which special regard is taken to the exclusion principle, has also given a most instructive explanation of the magnetic properties of metals, including ferromagnetism. Still, certain remarkable properties of electronic or atomic aggregates at very low temperatures, such as the supraconductivity of metals and the suprafluidity of helium which have not yet found any satisfactory explanation, seem to indicate that some essential feature of the lowest quantum states of these aggregates has as yet escaped us.

Apart from the incessant development of the explanation of the properties of matter on the basis of the original discoveries of the structural units of the atom, quite new fields of atomic theory have in recent years been opened by the discovery of further elementary particles which, like the positon and the neutron, only exceptionally appear in ordinary atomic phenomena, but which play a fundamental part in the problem of the constitution of the atomic nuclei themselves. The first isolation in cosmic rays of positive charged corpuscle of the same mass as the ordinary electron, now often called negaton, was a most striking confirmation of the rational development of the relativistic quantum theory of the electron, which led to the prediction of the possibility under certain conditions of the materialization of radiation quanta into a positon and a negaton, and of the inverse process of the annihilation of such a pair of oppositely charged electrons with appearance of radiative energy. It is just the last phenomenon which prevents the stable existence of the positon as a constituent of matter, where only ordinary electrons can be held round the positive atomic nuclei. Positons are liberated, however, as products of artificial radioactive disintegrations as frequently as negatons, the sign of the charge depending primarily on the ratio between charge and mass of the radioactive nucleus compared with that of stable nuclei. The liberation process itself must indeed in both cases be considered as the very creation of an electron as a mechanical entity, because such light particles cannot be considered as constituents of quantum mechanical systems of dimensions as small as those of atomic nuclei.

The possibility of treating nuclei as quantum mechanical systems entirely composed of heavy particles was opened by the isolation of the neutron through the study of nuclear transmutations by impact of fast material particles. In the development of a comprehensive theory of nuclear constitution based on a model of the nucleus composed of neutrons and protons in numbers indicated directly by its mass and charge we meet, however, with a problem which in some way is the inverse of that of atomic constitution, the characteristic simplicity of which lies in the possibility of identifying the forces between the constituent particles with the ordinary electric attractions and repulsions. In fact, the stability of nuclei claims the existence of forces of a novel type between protons and neutrons, appearing at small distances, and the character of which can only be gradually explored by the study of the nuclear phenomena themselves. Still, without a precise knowledge of the intranuclear forces, a most instructive explanation of the fundamental probability law of radioactive decay under emission of heavy charged particles has been obtained on quantum mechanics which permit the passage of such particles through a region outside the nucleus, where the potential energy corresponding to electrostatic repulsion is higher than the kinetic energy of the released particle, and the penetration of which would thus be impossible on classical mechanical ideas.

A more detailed theory of nuclear phenomena is, however, above all confronted with the difficulty that, owing to the close packing of the nuclear particles, no such approximative procedure as that applied with so great success to the classification of the binding of the individual electrons in the extranuclear configurations of atoms by means of quantum numbers is legitimate. On the contrary, we have in the normal and excited states of nuclei to do with types of motion of an essentially collective character, which must be quantized in a similar way as the states of molecular aggregates, as also appears clearly from the great differences between the distribution of the energy levels of nuclei compared with those of atoms. In particular has the study of nuclear transmutations revealed that the level distribution of a nucleus for high excitation is practically continuous, and that every impact between a fast particle and a nucleus leads, in the first place, to the formation of a semi-stable compound system, the eventual subsequent disintegration of which is to be considered as a separate event, independent of the first stage of the collision process. In this intermediate state the energy is stored in the compound system in a way similar to that of the thermal energy of ordinary bodies, and by introducing, in accordance with this comparison, a suitable definition of the temperature of the highly excited compound nucleus, it has been possible to treat the disintegration phenomena in close analogy to the evaporation processes of liquids and solids.

The effective temperatures involved in nuclear transmutations (thousands of million degrees centigrade) are not only extremely high compared with those available in ordinary experiments, but are even very high in comparison with those estimated generally to occur in the interior of celestial bodies like the sun, where nevertheless nuclear transformations must be expected to play an essential part as a source of the large energy continuously radiated away from the surface. Quite apart from this fascinating problem, the extreme conditions of temperature and pressure in stars confront us with new aspects of the structure of matter. Above all, stellar matter is certainly in a state in which, not only all usual molecular bonds are disrupted, but where even most electrons are entirely loosened from their ordinary bindings to atomic nuclei. The high energy of the free electrons which, together with the more or less stripped nuclei, constitute the bulk of the star, must even in some cases be expected to lend to the stellar matter new properties differing essentially from those of ordinary gaseous bodies. In cases of extreme pressures, it should even be possible that the high-speed electrons would combine with the nuclei, giving rise to an entirely new state of matter composed exclusively of free neutrons. A closer examination seems, however, to show that this peculiar state is hardly reached in the stars of the most common type, including our sun.

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MAURITIUS, a British crown colony consisting of an island in the South Indian Ocean, about 1,400m. from the coast of east Africa, lying between lat. 19° 50′ S. and long. 57° 18′ and 57° 48′ E., together with a large number of small islands, including Rodrigues and the Chagos archipelago. The governor and commander-in-chief is Sir Bede Clifford, K.C.M.G., who in May 1937 succeeded Sir W. E. F. Jackson, K.C.M.G.; he is assisted by an executive council and a council of government. The capital is Port Louis. Some labour disturbances culminated in Aug. 1937 in a disturbance in which the police were compelled to use firearms.

Area and Population.—Area: 720sq.m.; est. pop. (1936): 410,920, including 11,042 in the dependencies. Elementary education is free through government and state-aided schools. Advanced education is provided by the Royal College and the Royal College School, managed by the government.

Trade and Communications.—There are 500m. of exceptionally good metalled roads, and 110m. of government railways. There are telegraph and telephone services and a private broadcasting station. The chief product is sugar, the 1936 output reaching a record of 30,034 metric tons. Exports in 1935 were valued at Rs.29,891,160, and imports at Rs.26,895,460.

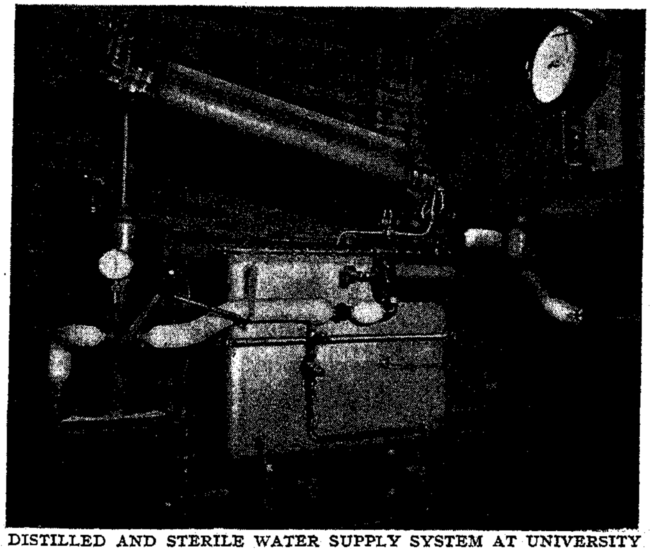
The unit of currency is the Mauritius silver rupee (par exchange, Rs.15 to the pound sterling), which has silver sub-divisions; bronze coins, and notes are also in circulation. There is house and poll taxation. Revenue in 1936 was Rs.15,350,986, and expenditure Rs.14,694,644.

MAYO, HENRY THOMAS, American naval officer; born in Burlington, Vermont, Dec. 8, 1856; died in Portsmouth, N.H., Feb. 23, 1937. After serving as commandant of the Navy Yard at Mare Island, Calif. (1911–13), he was made commander of the 4th Division of the Atlantic Fleet with the rank of rear-admiral. While stopping at Tampico, Mexico, in April 1914, he precipitated the Mexican crisis by ordering a salute to the American flag to make amends for the arrest of some American sailors while loading gasolene into a whaleboat. (*See Ency. Brit.*, vol. 15, p. 395.) During the World War he was commander-in-chief of the Atlantic Fleet. In 1917 Admiral Mayo represented the United States at the allied naval conference in London, and after the World War, in the flagship *Pennsylvania*, escorted President Wilson to the Peace Conference. His last posts were commander-in-chief of the United States Fleet (1919) and member of the Navy General Board (1920–21).

MEAT: *see* CATTLE AND MEAT.

MEDICINE. Among the outstanding medical advances in 1937 are two related particularly to the treatment of dementia praecox or schizophrenia, and the uses which have been developed for the drug called sulphanilamide.

Psychiatry.—For many years, scientific medicine has endeavoured to make progress in attacking dementia praecox, a form of insanity affecting youth and leading invariably in the past to progressive degeneration and death. Out of the laboratories now have come two new methods, which are essentially forms of shock treatment, for this condition. One involves the injection of the drug insulin to the point at which the patient loses consciousness or may develop convulsions due to a lessened amount of sugar in the blood. The other involves the injection of a drug called metrazol, which produces convulsions like those of epilepsy. Now that these methods have been tried on a great number of cases of this disease, reports are beginning to appear of numerous patients who have developed normal mental states and have been able to go back to their families and to their homes, and some of them into useful occupations. In some of the cases, however, there have been remissions and relapses, so that renewed treatment has become necessary. In other cases there have been complete failures. It would seem, however, that early use of the treatment, and particularly when combined with the modern methods used in sanatoriums, including physical, laboratory, and scientific therapy, may bring about actual cures in many cases. Here is a new ray of hope in a condition where formerly all was darkness.


DISTILLED AND STERILE WATER SUPPLY SYSTEM AT UNIVERSITY COLLEGE HOSPITAL, LONDON

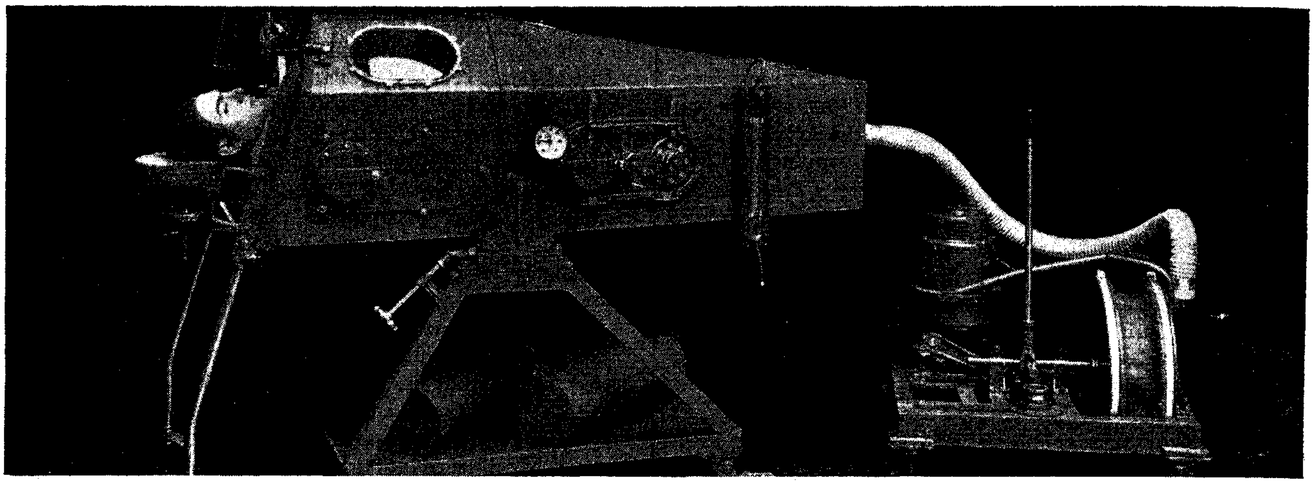
In addition to these discoveries in the field of nervous and mental diseases, attention should also be called to the development of the new method of study known as electroencephalography—a method of registering on a visible screen the actual activity going on within the brain. This method yields the possibility of great help in the diagnosis of various forms of diseases affecting the brain. It is particularly important to realize that scientific measurements mean actual science in contrast to the guesswork on which previous procedures may have been based.

The third field of interest in nervous and mental diseases is the use of surgery in the treatment of certain forms of psychoses or mental conditions. Operations have been developed in Montreal and in Washington, D.C., which involve crushing of portions of the brain and removing portions of the brain. All of this work, however, is in much too early a stage to indicate any established usefulness.

Chemotherapy. *Sulphanilamide.*—In 1935, the investigator Domagk announced the development of a dark red dye substance which is the hydrochloride of 4′-sulphamido-2 : 4-diaminoazobenzene. This drug was known by various names, among them 'prontosil'. From this there came the further development of prontylin, which is paraamino-benzenesulphonamide. This is a white powder and not a dye, and is known as sulphanilamide. Now that these two drugs have had extensive use in various parts of the world, much credit is given to them for the control of diseases formerly uncontrollable. For instance, the drugs are specific apparently against certain forms of streptococcus known as beta haemolytic streptococcus. Formerly, meningitis caused by these germs was invariably fatal. Already innumerable cases have been reported of recovery from such meningitis following the use of sulphanilamide.

The drug has also been found of value in the treatment of type 3, pneumonia; in the specific treatment of gonorrhœal infection of the eyes, particularly ophthalmia neonatorum, the infection of the eyes of the infant at birth; in other forms of meningitis than those due to the streptococcus; in certain cases of infection at childbirth; and finally in the treatment of infections of the mastoid bone, so that cases are reported of recovery in this condition without surgical operation.

So intense was the interest during the year 1937 in the new developments associated with this drug that one of the major disasters in medical practice in the United States resulted from this intensity of interest. The drug is available chiefly in the form of tablets, and in special solutions developed for injection. Because of its usefulness, attempts were made to develop solutions which could be taken by mouth, but the drug may be unstable in chemical combinations, and thus far no stable solution has been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. It occurred, however, to a manufacturer to dissolve the sulphanilamide in a solvent known as diethylene glycol. This solvent is well established for various industrial purposes, but has never been considered suitable for internal use; in fact, the Food and Drugs Administration of the Department of Agriculture had ruled that it be not used in food substances. The manufacturer distributed well over 700 packages of the preparation, either as samples directly to physicians, or else to individual drug stores or wholesale drug houses. Shortly thereafter reports began to appear of sudden death following the taking of this elixir of sulphanilamide; in practically every instance



Siebe, Gorman & Co., Ltd.]

THE DRINKER RESPIRATOR POPULARLY KNOWN AS THE IRON LUNG.

death resulted from uraemia as a result of the effects of the diethylene glycol on the kidneys of those who had taken the preparation. Acting as a hygroscopic agent, the diethylene glycol completely blocked the flow of fluid through the kidneys, with death from uraemia as the inevitable result. Seventy-three deaths were established as resulting from the taking of this mixture, and there may possibly be 20 others. By prompt action, the Food and Drugs Administration recovered every package of the material, and a special message has been sent to Congress urging amendments to the food and drugs legislation which will prevent such an occurrence in the future.

Vitamin Research.—Among the greatest of all the interests that have developed in recent years is the new attention paid to the vitamins. The Nobel prize in medicine for 1937 was awarded to Szent György for his investigation particularly related to the isolation and synthesis of vitamin C. In connexion with the vitamins, there was announced during 1937 the synthesis of vitamin B1, the isolation of a new anti-haemorrhagic vitamin, the development of new standards for vitamin D milk, the development of crystalline vitamin A, and the identification of nicotinic acid as possibly identical with one of the fractions of vitamin B. All of these discoveries are of immense importance in relationship to the vitamins in controlling various forms of disease.

Moreover, in connexion with the use of vitamin A, a device has been developed known as the biophotometer, by which it is possible to determine through examination of the eye whether or not a person suffers from a vitamin A deficiency. One of the early symptoms of vitamin A deficiency is the development of night blindness. It is possible that some of the motor accidents occurring particularly at night may be the result of a deficiency of this vitamin in the diet.

New Materials and Apparatus.—Among the new drugs which have been accepted during 1937 as having special value in various diseases, attention must be given to protamine zinc insulin which, when injected, has a longer and more gradual effect. By the use of this preparation, a person who has been taking three injections of insulin daily may find two sufficient, a person who has taken two injections may find one quite adequate.

Mandelic acid has been found of special value in the treatment of infection of the kidney and of the urinary tract.

Among new anaesthetics, particular attention must be given to two new products known as vinathene and pantocain. The search for new anaesthetic substances continues with a view to finding something less toxic than those already in use and at the same time easier to administer. Indeed, the development of new methods in anaesthesia represents one of the greatest contributions of medical science in the current century.

In the condition called myasthenia gravis, which is a disease affecting the nervous system, the muscles gradually waste away and lose their strength. In this condition, the product called prostigmin has been found to be of special value.

Interest attaches also to the product called benzedrine sulphate, now frequently inhaled during a common cold in order to relieve congestion in the nose. Taken internally, this drug has been useful in raising the blood pressure, but also particularly in stimulating the brain. For a while it was used among university students, who took the drug in order to think better and keep more wide awake during examinations. Since it was shown, however, that the stimulating effect of the drug on the heart and the blood pressure may be serious in certain cases, students everywhere have been warned against the routine use of such preparations.

In the field of physical devices some exceedingly interesting developments have occurred, particularly in the improvement of artificial apparatus to aid the hearing; in the development of new types of tents to be used by patients undergoing treatment with oxygen for pneumonia and similar conditions; and the new type of respirator for maintaining the breathing, particularly in cases of paralysis of the nerves and muscles involved in breathing as occurs in infantile paralysis. The new type of respirator or iron lung represents an improvement, because it covers only the upper half of the body and does not involve the insertion of the complete person into the apparatus.

Other forms of apparatus include a new type of machine for causing alternating filling and emptying of the blood-vessels, a useful method of treatment in such conditions as Buorger's disease, Raynaud's disease, and others affecting the circulation of the blood in the legs.

Apparatus has been developed for the use of short-wave radiations in raising the temperature of the body. Improvements have been made in various types of cabinets for administering heat in the treatment of such conditions as syphilis, arthritis, gonorrhoeal infections, and other conditions in which heat has been shown to be of value.

Since it has been established that many people are particularly sensitive to dust, feathers, and dandruff, new types of mattresses and pillows have been developed encased in materials which prevent the inhalation of dust or of dandruff.

Sensitivity.—More and more attention is being given to all forms of sensitivity of human beings to various substances. To-day, basic studies are made on the chemistry of the body and its functions in relationship to sensitization. It has been found that there may be sensitivity to chemical substances, that the patient who is sensitive has a normal tolerance for sugar, that probably the amount of calcium and potassium circulated in the blood is not of particular importance in relationship to sensitivity. It has been found that sensitivity to certain foods may produce a fever in the human body, that there are important changes in the blood in connexion with some forms of sensitivity, and that people who are sensitive to some foods may develop excessive bleeding. Finally, attempts have been made to develop extracts and concentrates of the pollens and other protein substances, with the idea that these substances taken internally might develop desensitization. An extensive study of these methods has not proved that this is a helpful procedure.

Surgery.—In the field of surgery, attention has centred largely on the possibility of performing various surgical operations on the heart so as to increase the blood supply to the tissues of the heart after various types of disturbances, and also on operations which are performed on the nervous system with a view to benefiting high blood-pressure and other conditions related to disturbances of the so-called sympathetic nervous system.

Vaccination.—Since the attack on the infectious diseases continues to be one of the chief problems of medical science, special attention must be paid to the new experiments in relationship to infantile paralysis which have demonstrated that in the vast majority of cases the infection enters the human body by way of the nose, and that it may be possible, through the use of various solutions, to obstruct the entrance by way of the olfactory nerves in the upper part of the nose. It is possible that the specific virus causing measles may have been isolated. Apparently rabies or hydrophobia tends to develop rapidly whenever preventive medicine relaxes its vigilance.

In the treatment of pneumonia, new serums have been developed for types of pneumonia 5, 7, 8, and 14 that seem to be as good as the pneumonia serum for pneumonia types 1 and 2. Experiments, using the blood of rabbits, have shown that serums may be developed from the rabbit for pneumonia types 1, 2, 7, and 8, with the possibility that the unconcentrated rabbit serum is more useful than the old concentrated horse serum. Moreover, in the treatment of pneumonia there has been the development of a compound of quinine which seems to have specific action on the germ of pneumonia, and at the same time to be free from harm to the nerves.

In the prevention and treatment of whooping-cough there has taken place further refinement in the vaccines used for this purpose. In Denmark particularly, most encouraging reports have been forthcoming. In Denmark, also, experiments have been done with toxoid against diphtheria which has been used intravenously, and also the application of solutions on the mucous membrane of the nose. These constitute routes that are alternatives to the injection under the skin of this preventive preparation.

Extensive experimentation has also been conducted during the year on the possible use of injection of various vaccines at the same time with the possibility that the child may be immunized by one injection or one series of injections against several different diseases.

Public Health Work.—Outstanding among the campaigns in the field of preventive medicine during the year was a movement in the United States towards the enlightenment of the public on syphilis and gonorrhoea. These venereal diseases, formerly shrouded in mystery because of public modesty, are now attacked through public campaigns in the press, before forums, and over the radio. The new attack on syphilis is supported by the appropriation of millions of dollars in the campaign, and by the application of new methods of diagnosis and treatment, which indicate that with proper education of the public and of the medical profession, the application of the new methods may bring about a tremendous lowering of the incidence of these diseases. Especially to be mentioned are fever treatment in many forms of gonorrhoea, the use of sulphanilamide for gonorrhoeal infections of the eyes of children, and improved methods in the use of bismuth and arsenic. During the year, three States adopted a law making it compulsory to have a test of the blood for the presence of syphilis before issuing a marriage licence.

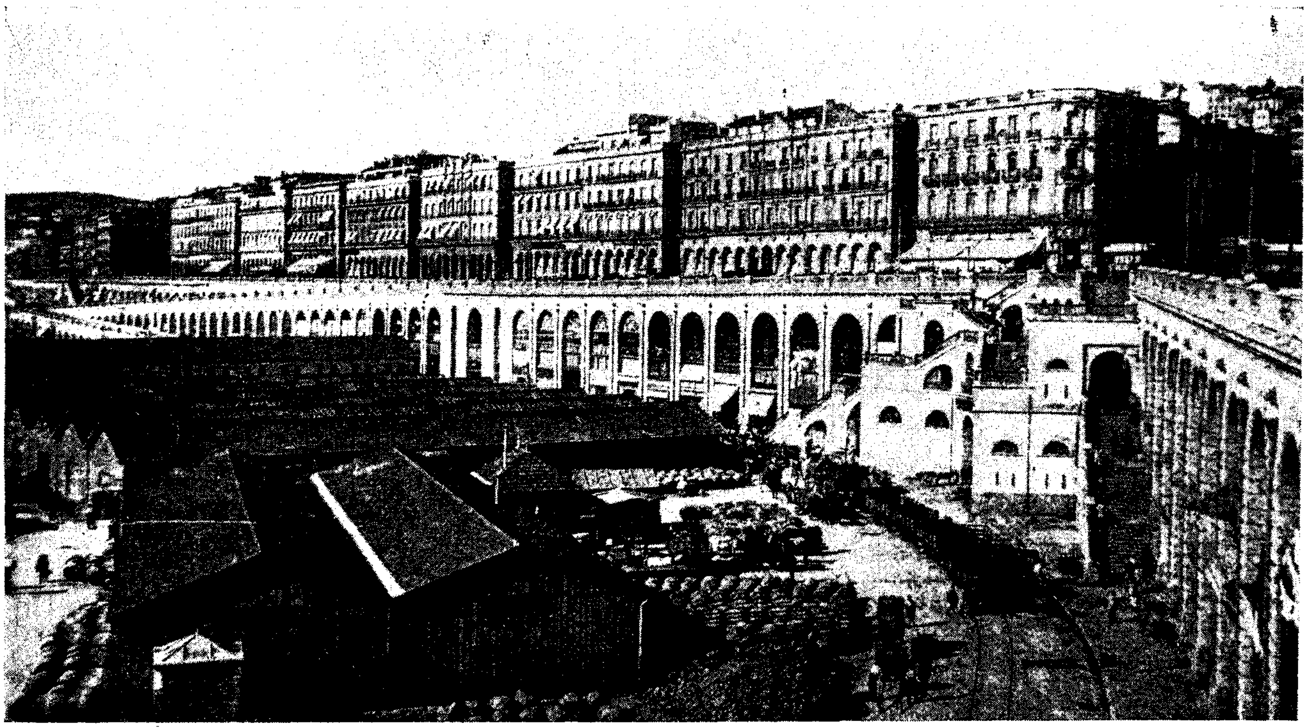
Problems of health, important from the public health point of view, which have had special attention during the year include new studies and new apparatus for air conditioning; demands for new legislation controlling the purity and safety of foods, drugs, and cosmetics; investigations as to the health hazards involved in contamination of fruits and vegetables by the method of spraying to prevent parasitic investation.

(*See* also separate articles on CHEMOTHERAPY; INFANTILE PARALYSIS; PNEUMONIA; PSYCHIATRY; SURGERY; VITAMINS; etc.) (M. FI.)

MEDITERRANEAN, THE. During the year 1937 the Mediterranean has been the scene of important events and developments. The civil war in Spain, the limitation of which to the peninsula became of such importance to European peace, gave birth to an experiment in isolation. A 'pacific blockade', though warmly espoused by some persons in Great Britain, was clearly seen to be both impossible and useless. In place, an arrangement for observation of the Spanish coasts and land frontiers was established. Supervisors were to be embarked on board ships bound for Spanish ports, whose duty it was to superintend the unloading of ships in those ports and ensure that they carried neither arms, munitions, nor volunteers. At sea, the Navies of the United Kingdom, France, Germany, and Italy were to patrol in certain zones off the coast and report, to the International Committee for Non-intervention, the arrival within their zones of ships which had either not been under supervision or which refused to submit to examination.

The Spanish Mediterranean coast was divided for this purpose into zones. The coast of Spanish Morocco, Majorca, and Iviza were allotted to France; from Gibraltar to Cape Gata to Great Britain; from Cape Gata to Cape Oropesa to Germany; from Cape Oropesa to the Pyrenees frontier and the island of Minorca to Italy. Thus, the distribution was so made that the Powers whose duty it was to prevent supplies and volunteers from reaching the coast were those whose political sympathies might be expected to make them vigilant in excluding shipping.

The arrangement was put into force, but not for long. In consequence of a submarine attack reported to have been made upon the German cruiser *Leipzig* when cruising



Wide World Photos]

ALGIERS. A VIEW OF THE QUAYS AND THE BOULEVARD DE LA RÉPUBLIQUE

at sea, and of the bombing of a German armoured cruiser in harbour, Germany withdrew from the observation scheme. Her place was taken by the British and French Navies.

As the civil war continued, attacks were made upon the shipping of the neutral nations, indiscriminately, by flotilla craft, submarines, and aircraft whose nationality was not known. Ships were fired upon, torpedoed, or bombed. To bring this to an end, an arrangement was made, by an international committee sitting at Nyon, to patrol the sea routes, Great Britain, France, and Italy being allocated zones in the routes. After some difficulties, arising out of Italy's representation that too small an area had been placed in her control, the scheme was put into operation and met with success, the 'piratical' attacks ceasing almost entirely. Later, the scheme of coastal supervision came to an end.

In the Balearic Islands, Minorca, with its small but excellent harbour Port Mahon, has remained in the hands of the Spanish government. Majorca, which was occupied and brought under the control of the insurgents by Italian forces immediately on the outbreak of the civil war, has been kept in Italian hands. Although strong assurances have been expressed by General Franco that he will allow no portion of Spanish territory whatever to pass out of Spanish possession, there has been an unavoidable anxiety both in Britain and France lest circumstances may prove too strong for him. Majorca, situated as it is, closely flanking the lengthwise traffic of the Mediterranean, is of particular importance to Great Britain, while the crosswise traffic between France and her North African Empire, forming an essential link in the French military communications, is of no less importance to France. The occupation, therefore, of that island by a powerful naval and military Power could never be a matter of indifference to either France or Great Britain.

A new Italian base has been in the course of development in the island of Pantellaria. Lying as this island does in almost the narrowest part of the sea between Sicily and Tunis, its development as a naval and air base introduces a new element into Mediterranean strategy.

How far the increasing power of aircraft will affect either the command of the sea, or the continuance of traffic by sea in those regions within the range of aircraft has been a matter of speculation for some years. According to the views of one school of thought, aircraft will render it impossible for ships of war to operate at sea, for merchant shipping to traverse sea routes, or for ships to lie in harbours within the reach of aircraft. The experience of the year 1937 in the Mediterranean has not confirmed these expectations. Ships of war and merchant ships have not been prevented from moving along all parts of the Spanish coasts, or from lying in Spanish harbours. The experience is, for many reasons, of too limited a nature to enable definite conclusions to be drawn, but, such as it is, combined with the experience of the Yangtse in the Sino-Japanese war, it does not lead to the conclusion that either the bases of the British fleet in the Mediterranean would be rendered untenable in war by aircraft, or that ships of war would be unable to move or to afford protection to shipping at sea. The fact that Pantellaria, lying within a short distance from the mainland of a foreign State, is being developed as a base, appears to indicate that Italian technical opinion does not share in the belief in the untenability of a position so situated.

In the eastern basin of the Mediterranean the serious disturbances, calling for the use of a comparatively large body of troops, have continued in Palestine, unbroken by the proposals of the Peel Commission. Arab hostility to the Mandate has shown itself as fixed as it has been from the beginning. The position in the Mediterranean is affected by the repercussions of this unrest. If Great Britain should find herself involved in war, the situation in the Mediterranean would be affected if the oil supplies of the forces operating in the Mediterranean were threatened on land. The pipe-line from Mosul, which brings the oil to the coast at Haifa, would be exposed to injury from a hos-

Fox Photos]

MAJORCA. A VIEW OF PALMA, WITH THE CATHEDRAL IN THE DISTANCE

tile population. The quantity—some 5·1 per cent. of the British imports of oil—may not seem considerable, but it is by no means negligible; and still less negligible would the strategical disadvantage be of being unable to supply the fleet in those waters from so convenient a source of supply. Hence, as has happened in analogous situations in the past, it might prove necessary to despatch military forces to guard the land line of this supply; and, as much experience has shown, it is not possible to predict the limits to which such action might extend.

The other disturbing feature in the eastern Mediterranean has been the constant stream of anti-British propaganda which has been poured from the wireless station at Bari into the Near and Middle East. Reference has been made to this in the British Parliament, and representations made to Italy. Recent Italian writings have displayed a tendency to represent Great Britain, both in the past and present, as the obstacle to Italian expansion and the creation of a *mare nostro*.

The possibility that it might prove necessary, or desirable, to divert in war some of the British trade which now originates in, or passes through, the Mediterranean, has been a question that has attracted increasing attention in British circles. The British imports on the Mediterranean route amount to a little less than one-fifth of the whole British import trade; and of that, somewhat less than a half comes from east of Suez, somewhat more than a half comes from countries bordering the Mediterranean and the Red Sea. Diversion of some of this round the Cape of Good Hope has many obvious economic disadvantages: longer voyages; great consumption of fuel by fuel carriers; heavier demands upon mercantile tonnage which, as the last war showed, must be used to its utmost effective power; loss of the freights and the trade normally conducted with intermediate ports; and the effects of all of these upon competition, always acute, in sea carriage—these cannot fail to be serious. Against these disadvantages must be weighed the strategical disadvantages of affording protection. The possibility that diversion might in certain circumstances be needed is reflected in the extensive development which is now in progress at the harbour of Table Bay.

A joint declaration on Jan. 2, 1937, was made by the British and Italian governments, which recognized that ' freedom of entry into, exit from, and transit through the Mediterranean is of vital interest both to the different parts of the British Empire and to Italy ', and disclaimed any desire to modify the *status quo* in the Mediterranean; and each undertook to respect the other's rights and interests in that area. In answer to a specific question asked by the British Ambassador on Dec. 31, 1936, as to whether Italy intended that ' the integrity of the present territories of Spain shall in all circumstances remain intact and unmodified ', Count Ciano replied that such was Italy's intention.

BIBLIOGRAPHY.—For some recent surveys of the historical and modern importance of the Mediterranean, and of policy relating thereto, *see* Slocombe, *The Dangerous Sea*; Petrie, *Lords of the Mediterranean*; Vanutelli, *Il Mediterraneo e la Civilta Mondiale*; Squadrilli, *Politica Marinara e Impero Fascista*. For views on the attacks on Mediterranean trade: McNair, ' The Law relating to the Civil War in Spain ' (*Law Quarterly Review*, 1937, pp. 471 *et seq.*); Jessup, ' The Spanish Rebellion and International Law ' (*Foreign Affairs*, Jan. 1937, p. 384). For the Anglo-Italian Declarations: *cmd.* 5348 and 5429. (H. W. Ri.)

MELBOURNE. Capital city of the State of Victoria, Australia (*q.v.*); situated on sheltered waters at the head of Port Philip Bay; second city and port of Australia; distance from London, 11,267m. Pop. (Dec. 31, 1936), including suburbs, 1,016,500, comprising 54·7 per cent. of population of Victoria; area, 125,926 acres. Shipping (1935–36): net tonnage entered, 8,056,623 tons; cargo discharged, 2,946,399 tons (1,802,135 tons interstate); cargo shipped, 1,373,347 tons (658,549 tons interstate).

Melbourne enjoyed a building boom in 1937. Building permits in city and suburbs were valued at approximately £8 millions; September figure was £638,000, about £24,000 more than in Sept. 1936. In the city, building exceeded all previous records. The housing shortage in the metropolitan area was estimated at 30,000 houses; a slum inquiry board recommended the construction of 5,000 new dwellings within five miles of Melbourne. Local prosperity continued, though the stock exchange responded to adverse movements in London and New York after April. Registered unemployment (males) in the metropolitan area: 10,667 in Sept. 1937, compared with 11,101 in Sept. 1936 and 17,085 in Sept. 1935. Evidence of expanded purchasing power was given by totalizator receipts at Flemington racecourse on the days of the local Derby and Melbourne Cup (Oct. 30 and Nov. 2): total receipts were £220,187, compared with £188,461 in 1936. The Melbourne Cup, Australia's most famous race, was won by ' The Trump '. In the latter part of the year a serious incidence of infantile paralysis caused a reduction of turnover in shops, places of entertainment, public transport, etc.

MELLON, ANDREW WILLIAM, American statesman and financier; born March 24, 1855; died at Southampton, L.I., Aug. 26, 1937. A biography is to be found in the *Ency. Brit.*, vol. 15, p. 226. He was U.S. ambassador to Great Britain from Feb. 1932 to March 1933. Soon after his return to the United States, he was unsuccessfully prosecuted by the Federal government for tax evasion, and a few months before his death steps were taken to dissolve his $174 millions aluminium company as a monopoly. His philanthropies, including large contributions to the Carnegie Library of Pittsburgh, the Carnegie Institute of Technology, and the Mellon Institute of Industrial Research, were culminated by provision for erection of a National Gallery of

Art at Washington and the gift of his collection of paintings, valued at over $19 millions, as a nucleus. The will covering the large estate remaining in his hands upon his death provided for the establishment of educational and charitable trust funds.

MEMEL TERRITORY, a long strip of land along the right bank of the river Niemen on the frontier of East Prussia, comprises 976sq.m. and a population of about 150,000. According to the German census of 1910, this region had a population of 149,766, of whom 71,191 spoke German as their mother-tongue, 67,345 Lithuanian, and 1,970 were bi-lingual. The Germans greatly predominated in the town and port of Memel (*Klaipeda*), the Lithuanians in the rural districts. For the history since the Versailles Treaty, *see Ency. Brit.*, vol. 15, p. 232.

Unfortunately, racial hatred between Memellanders and Lithuanians prevented the smooth working of the government. The first Landtag, elected in Oct. 1925, was composed of 27 Germans and 2 Lithuanians—a striking indication of the German sympathies of the Memellanders, even of those whose mother-tongue is Lithuanian. Lithuania, irritated by this, used all sorts of coercion to restrict the enjoyment of the promised autonomy and to lessen German influence. In 1934, 538 German employees were dismissed and 126 Germans were accused of treason before a Lithuanian military tribunal. Before the election of Sept. 1935, German newspapers were illegally suppressed, four candidates were deprived of citizenship to prevent their election, and some 9,000 Lithuanians were given the vote. By an expropriation law of Sept. 6, 1937, Lithuanian authorities began to seize German land for barracks and other public buildings without consulting the local authorities and without assuring adequate compensation. President Baldszus protested in the Landtag that this was contrary to the terms of the Memel Statute of 1924, and his protest was adopted by an overwhelming majority. *See* Ian F. D. Morrow, *The Peace Settlement in the Polish-German Borderlands*, 1936. (S. B. F.)

METALLURGY. There was nothing spectacular in metallurgical advances in 1937, except in the fluctuations in the prices of non-ferrous metals. Electrolytic copper opened in London at £54½ per ton, rose to £79 per ton in March, and closed at £43¼. Lead opened at £26$\frac{9}{16}$ per ton, rose in March to £36, and fell to £15½. Standard spot tin opened at £228⅜ per ton, advanced to £301 in March, and closed at £181¾. Zinc opened at £18$\frac{7}{16}$ in London, rose to £36¼ in March, and closed at £15½. American prices paralleled this record of extraordinary instability.

A short résumé of technical developments follows:

Copper.—Advances during the year were largely confined to fabrication, such as improvement in the extrusion of such alloys as cupronickel, aluminium bronze and aluminium brass, and to the bright annealing of copper and all copper alloys.

Gold.—The continued high price of gold resulted in great activity but no great changes in metallurgy. Dredges were increasingly complex: what used to be very simple affairs becoming highly developed floating metallurgical plants. At Wiluna Gold Mines, Ltd., in Australia, novel metallurgy was introduced into the treatment of an antimony-gold ore, formerly treated by cyanidation.

Iron and Steel.—The year 1937 was marked by much attention to the quality of pig-iron, both as produced by the blast furnace and as remelted in the cupola. German metallurgists did much in the way of developing chrome-molybdenum steels carrying 0·2 to 1·2 per cent. molybdenum that were decidedly cheaper and probably stronger than much more expensive chrome-nickel steels. A drawback of the new steels was a very narrow limit in the proper heat-treatment range, but labour for close attention to this point was cheaper than nickel. The Germans also extended their previous work on manganese as a substitute for nickel in certain austenitic steels. Case-hardening by the zirconium group appears to have made substantial progress during the year. The production of aluminium-coated steel reached large-scale commercial production both for wire and plate.

Lead.—There were no marked changes in lead-smelting practice during 1937. At the Trail, British Columbia, blast furnaces, a large number of small tuyères were substituted for a small number of large tuyères, apparently with good effect. The continuous desilverizing process introduced at Port Pirie, Australia, was reported as a complete economic success; but it was not adopted elsewhere. The first published descriptions of the Northfleet, Kent, lead refinery appeared in 1937. This is one of the world's large refineries and is supposed to embody the best modern practice. It operates on bullion from Mount Isa, Queensland, and produces lead, silver, arsenic, antimony, and copper. The process is a Betterton modification of the Parkes process. The world's tallest stack, 605¾ft., was completed at the Selby, Calif., smeltery of the American Smelting & Refining Co.

Tin.—The International Cartel continued in full control of tin production throughout most of the world. The high price of tin greatly stimulated research both for tin substitutes and in the use of electrolytic tin coatings requiring a smaller amount of tin to replace the hot-dip plate now used.

Zinc.—The introduction of vertical retorts into Germany was probably the outstanding development in 1937. Eight retorts were completed at Oker to treat the Rammelsburg complex ore, with a rated capacity of 10,000 metric tons per year, and another unit was under construction. Electrolytic zinc capacity increased greatly. The Sullivan Mining Co. of Kellogg, Idaho; the Hudson Bay Mining & Smelting Co., Flin Flon, British Columbia; and the government-subsidized plant at Magdeburg, Germany, all increased their capacity. The U.S.S.R. projected a new plant for the Altai district. Republic Steel Co. has begun electro-galvanizing operations on a large scale near Chicago, Ill. The production of zinc-coated strip in coils with a heavy plating sufficiently ductile to withstand fabricating operations was announced as a commercial success.

Miscellaneous.—Showing the use of fundamental investigations, the application of what was originally a purely scientific idea, that of the 'Beilby layer' (an amorphous film on the surface of metals) and a comparatively new research technique, that of electron diffraction, have resulted in a practical result of interest to all motor engineers and in fact to all users of motor-cars. An aluminium piston anodically oxidized has a surface layer of aluminium oxide. In 'running in' the piston, this aluminium oxide is converted into crystals that score the cylinder walls. If a layer of magnesium spinel ($Mg_3(Al_2O_3)_2$) is substituted, a permanently amorphous coating of better-wearing properties is substituted. (D. M. L.)

METALS: *see* COPPER; GOLD; IRON AND STEEL; MINERAL PRODUCTS.

METEOROLOGY. The following values are to be regarded as provisional, and subject to slight corrections. Gaps in the tables indicate that the corresponding data are not yet available.

Monthly Rainfall in Inches for 1937

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
London	3·8	4·1	2·8	2·0	2·2	1·8	0·9	3·0	2·0	2·4	1·4	3·8
Edinburgh	2·0	3·0	1·7	1·1	2·5	1·0	5·4	4·1	1·6	0·2	0·6	2·8
Paris	3·8	3·6	3·1	2·6	3·2	1·3	1·3	0·4	3·5	2·4	0·9	2·6
Berlin	1·0	2·5	2·6	2·3	2·0	1·8	3·0	3·8	1·5	0·9	1·3	1·1
Stockholm	1·6	2·5	2·2	1·1	0·6	0·8	3·7	2·5	4·9	0·4	3·8	2·3
Oslo	2·0	1·7	2·1	2·4	2·8	3·1	1·4	1·2	4·8	1·3	0·1	0·3
Copenhagen	1·0	1·9	3·2	1·3	3·4	1·6	2·0	0·8	2·0	0·6	1·9	2·2
Utrecht	3·8	4·2	3·1	2·4	2·2	2·3	1·9	2·6	3·5	0·6	1·5	2·0
Vienna	1·1	1·7	4·2	2·5	0·5	3·1	4·2	4·6	5·2	1·2	2·0	2·4
Lisbon	7·5	1·8	6·6	1·3	1·0	0·4	0·0	0·0	0·8	6·0	7·3	3·3
Rome	—	—	2·8	1·6	2·4	—	0·0	0·8	—	5·2	2·8	5·2
Leningrad	0·8	1·6	2·4	0·4	2·0	0·8	4·4	2·0	2·4	0·4	2·0	2·0
Moscow	0·4	3·2	3·2	0·8	2·0	2·4	4·8	2·0	1·6	2·0	2·0	2·4
Calcutta	0·0	5·4	0·4	0·2	5·5	17·5	10·9	14·1	13·3	7·9	—	—
Bombay	0·0	0·6	0·0	0·0	0·0	18·3	30·4	5·5	14·2	1·6	—	—
Baghdad	—	—	—	0·7	0·2	0·0	0·0	0·0	0·0	0·5	1·1	0·0
Rangoon	0·0	0·5	0·0	4·0	9·6	20·1	28·0	16·2	19·1	10·8	—	—
Singapore	8·2	7·5	6·9	10·7	12·8	4·9	2·9	4·6	8·0	3·5	9·0	10·4
Capetown	1·2	0·3	1·9	2·2	3·4	8·1	5·9	1·4	1·7	1·1	1·0	0·0
Johannesburg	8·5	5·9	2·6	1·8	0·3	0·0	0·1	0·0	1·1	1·4	2·4	8·5
Salisbury (Rhodesia)	4·7	8·1	2·5	1·0	0·0	0·0	0·0	0·0	0·0	0·1	—	—
New York	6·0	1·9	2·9	5·0	2·6	3·1	4·4	7·9	4·0	4·6	4·0	2·0
Chicago	2·3	0·6	1·2	4·6	1·6	5·0	1·4	2·7	2·0	—	1·2	1·2
San Francisco	5·3	4·9	7·1	0·9	0·1	0·6	0·0	0·0	0·0	0·8	2·4	3·6
Quebec	3·8	2·4	2·1	2·0	4·5	4·8	4·4	9·6	5·8	7·5	4·3	—
Toronto	5·2	2·2	1·5	4·0	2·9	3·6	2·9	2·9	1·4	2·8	2·0	1·6
Winnipeg	1·0	1·2	0·3	2·6	2·2	2·2	2·8	2·1	2·3	0·7	0·9	1·6
Victoria, B.C.	2·3	5·2	1·4	2·3	0·4	2·2	0·0	1·6	0·4	3·2	6·4	3·2
Sydney	2·1	1·3	9·1	5·6	0·8	15·8	3·3	4·2	0·5	3·3	3·7	—
Melbourne	2·5	1·6	1·2	1·4	1·3	1·3	1·2	1·3	1·7	6·1	0·4	—
Perth	0·0	0·4	0·2	4·1	7·3	9·0	2·5	6·8	2·7	1·5	0·7	—
Wellington, N.Z.	3·1	4·2	2·2	2·3	3·4	3·3	3·9	1·0	3·5	0·9	2·9	—

Monthly Mean Temperatures in °F. for 1937

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
London	42·4	43·5	39·9	49·9	56·1	60·6	63·7	65·7	57·4	52·5	44·3	41·4
Edinburgh	40·1	38·5	35·6	46·1	51·3	55·6	58·0	58·7	54·1	42·7	41·1	37·7
Paris	42·4	45·0	42·6	52·0	60·1	63·0	66·0	67·6	60·3	53·6	42·6	38·5
Berlin	26·6	36·0	38·1	47·8	62·2	64·6	64·8	64·6	57·9	50·9	38·5	32·1
Stockholm	28·8	26·6	29·1	41·5	55·2	61·2	66·2	65·5	54·9	48·0	37·2	25·3
Oslo	28·4	24·6	29·5	44·6	56·3	65·5	65·3	52·7	46·8	46·8	31·8	21·9
Copenhagen	31·5	33·4	34·0	44·2	54·9	59·5	64·4	66·0	57·7	50·9	39·2	32·9
Utrecht	37·2	41·0	39·4	49·3	60·4	63·3	64·6	66·0	58·5	52·9	41·0	34·9
Vienna	27·1	36·1	42·6	49·1	62·4	67·5	67·1	65·7	58·6	51·3	38·7	32·5
Lisbon	51·1	54·7	53·4	59·5	62·2	64·9	71·6	71·1	68·4	63·0	58·4	51·1
Rome	—	—	52·3	53·2	61·2	—	71·1	71·2	—	62·2	54·7	48·2
Leningrad	18·5	20·1	29·1	43·9	53·2	61·3	64·8	66·2	55·6	43·5	35·8	15·8
Moscow	11·7	19·2	29·6	46·5	53·1	63·5	63·9	64·0	56·8	42·4	31·8	16·9
Calcutta	65·3	71·6	80·4	86·6	87·6	85·5	84·6	84·0	84·1	80·8	—	—
Bombay	73·7	75·4	78·3	82·6	85·0	83·7	80·4	81·1	80·9	81·0	—	—
Baghdad	—	—	—	73·4	83·1	89·0	96·0	94·3	90·5	78·9	64·3	52·5
Rangoon	78·6	81·1	82·7	87·9	83·3	82·0	80·5	81·7	80·8	80·4	—	—
Singapore	80·1	80·5	81·9	81·7	81·0	82·3	82·1	82·4	81·0	80·4	80·2	79·7
Capetown	71·1	72·3	69·2	62·5	58·7	56·3	54·7	57·9	59·3	62·9	66·3	70·1
Johannesburg	66·2	66·1	64·7	60·0	58·3	52·2	47·5	56·6	51·3	64·1	68·3	63·3
Salisbury (Rhodesia)	70·4	69·5	68·5	65·3	60·9	58·3	55·1	58·7	66·9	69·9	—	—
New York	40·4	34·8	36·5	49·0	63·3	70·6	75·4	75·7	65·2	55·4	45·6	35·4
Chicago	26·9	26·4	32·8	46·5	57·9	65·9	74·4	75·7	65·1	—	37·4	26·6
San Francisco	43·6	49·9	54·8	54·5	57·2	61·4	59·3	58·9	61·4	63·4	58·2	55·8
Quebec	18	21	21	40	55	63	70	70	56	45	33	—
Toronto	31·1	27·9	28·6	43·3	56·6	65·9	71·0	72·0	60·1	50·2	38·9	27·8
Winnipeg	−12·9	2·8	17·1	37·9	55·2	62·5	70·0	69·0	53·6	43·9	23·0	5·6
Victoria B.C.	31·1	38·6	46·1	47·5	53·4	58·7	60·1	59·4	58·3	54·9	46·2	42·2
Sydney	73·3	71·3	70·2	62·9	59·9	54·0	53·7	56·7	67·0	63·9	67·5	—
Melbourne	64·9	68·6	66·0	58·1	54·9	46·2	48·7	53·3	56·5	59·5	64·3	—
Perth	73·8	75·9	71·7	70·0	61·7	56·7	55·1	56·3	57·9	62·5	68·2	—
Wellington, N.Z.	59·7	57·7	59·1	55·2	57·6	45·4	45·6	48·7	49·5	51·6	57·2	—

General Notes on the Weather of 1937.—Temperatures were well above normal over north-western Europe and the Arctic during January and February, and were unusually high in the Arctic during March. This led to an early southward drift of the Arctic ice in early March, bringing a spell of cold weather in the countries bordering on the eastern Atlantic. Rainfall was generally above normal over most of Europe during the months January to June, with temperatures above normal. During July, temperatures were above normal over most of north-western and northern Europe, and over North America, very high temperatures being recorded in Canada from July 6 to 12.

In October, floods followed heavy rains and thunderstorms in the Pyrenees, northern Spain, Tuscany, the Riviera, and Yugoslavia. November was mild over most of Europe, with abnormally low temperatures in eastern Siberia, and in the south-eastern part of the United States. During December, temperatures were below normal over nearly the whole of Europe, over Central Asia, and over the central regions of the United States.

In Australia, rainfall in January ended a drought, and rainfall was generally above normal in March. During the months April to October, rainfall was generally deficient, except in May in South Australia, Western Australia, and Tasmania, where it was above normal. During November, rainfall was above normal over most of the continent.

	Rainfall in ins.	Sunshine in hours.
London	30	1,332
Edinburgh	26	1,276 (Jan.–Nov.)
Paris	29	1,779 (Jan.–July)
Berlin	24	1,642 (Jan.–Nov.)
Moscow	27	—
New York	48	—

(D. Bru.)

METHODIST CHURCH, THE. There are in Great Britain 14,617 Methodist churches (an increase of 21 since 1936), with 828,950 members and probationers, an increase of about 10,000, though the net decrease of actual church members is 8,531. The churches have a seating accommodation of 4,052,973. Both Sunday Schools and the number of scholars show decreases, there being 484 fewer schools, whilst the scholars (1,056,175) are numerically lower by 66,625.

The total income of the Methodist Church in Great Britain (not including Sunday Schools' income or money raised for hospitals and non-Methodist purposes) is approximately £3,950,000.

Overseas, the United Church of Canada has 697,725 members and probationers; the Australasian Methodist Church, 137,149, and the New Zealand Methodist Church, 34,624; whilst Methodists in Ireland number 30,823. Counting the world over, and including the Methodist Episcopal Church of America, the followers of John Wesley number upwards of 12 millions.

The annual conference of the Church was held in July at Bradford, Yorks, the Rev. Robert Bond, D.D. (hitherto secretary of the conference), being president, and the Rt. Hon. Isaac Foot, vice-president. This was the sixth conference of the United Methodist Church, and concern was expressed at the decline in church and Sunday School attendances, and emphasis laid on the necessity for an increasing awareness of Christian principles.

Among the subjects discussed were the Wesley Bicentenary, the 200th anniversary of the 'Evangelical conversion' of John and Charles Wesley falling on May 24, 1938.

The report of the temperance and social welfare department showed that there were 1,529 Bands of Hope and 3,814 branches of the Abstainers' League. The Order of Christian Citizenship, a strong youth movement, has grown steadily, its members numbering 21,450. Some 2,000 young Methodists participated in an International Youth Rally at the Albert Hall, London, in January, this being the first step towards a projected Christian International Youth Conference in 1939. In 1938 the Methodist Conference will be held in July at Hull, Yorks. The Rev. W. L. Wardle is designated president, and Mr. R. P. Tomlinson, vice-president. (X.)

United States.—In 1937, the Methodist Episcopal Church had nearly 18,000 preachers, 17,000 circuits and stations, 550 district superintendents, and 1,100 men in special appointments. There were 550,000 enrolled in the Epworth Leagues and 3,915,000 in the church schools. During the year, more than 175,000 were baptized and 14,000 were received into full membership in the church. With work on every continent, there are more than 4,700,000 members. About 27,000 churches and 15,700 parsonages are reported, with a net value of $455 million. This does not include the value of buildings and endowments of 98 educational institutions, 72 hospitals, 45 homes for the aged, 43 children's homes, 46 deaconess's homes and 26 homes for business girls, or the property of the Women's Foreign and Women's Home Missionary Societies. The churches contributed $49 millions for local expenses during the year, and $7,750,000 for benevolences: $12·18 per member. There are 22 effective, 2 missionary, 7 central conference, and 11 retired bishops. In 1790, the year of the first census, the population of the United States was 3,930,000 and there were 57,600 Methodists, or about 1·5 to every 100 residents. In 1930, the population was 123 millions and the Methodists numbered 4,400,000, or about 3·6 per 100.

Besides the Methodist Episcopal Church, there are 18 other Methodist organizations, with a total for them all of 43,000 ministers, 61,000 churches, and 9,000,000 members. Native Methodist Churches have also grown from mission work in Japan, Brazil, Mexico, and Korea.

The final vote on the union of the Methodist Episcopal, the Methodist Episcopal South, and the Methodist Protestant Churches, to be known as the Methodist Church, will be taken at the General Conference of the Church South in May 1938. The other two General Conferences and the Annual Conferences of the three churches have already voted favourably. (*See* also Sunday Schools.) (T. P. P.)

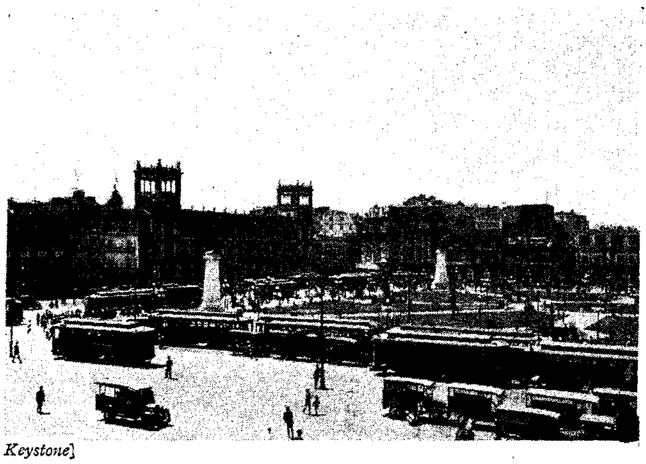
MEXICO, a Federal republic lying between the United States and Central America and bordering the Pacific and Atlantic (Gulf of Mexico); language, Spanish; capital, Mexico City; president, Lázaro Cárdenas; area, 767,168 sq.m. Population (census, 1930) 16,552,722; (official est. 1935) 18,512,837. Chief cities: Mexico City (1,229,576), Guadalajara (184,826), Monterrey (137,388), Puebla (122,914), Mérida (110,183.)

History.—Mexico includes 28 States, each with its own governor and legislature and a limited autonomy, and two territories and a Federal district, with governors appointed by the president. The national government is administered by a president elected for six years, and a congress. Developments in 1937 centred on governmental acts calculated to make effective the six-year plan of 1934, and thereby to bring to an orderly conclusion the social revolution. Economic conditions were apparently good until mid-year, but real wages were far below the 1934 level, and on Aug. 1, 500,000 workers in Mexico City protested against the high cost of living. The deceptive prosperity was due partly to a revived demand for minerals and oil from belligerent countries in Europe and Asia, to a depreciation of currency which boomed export trade, new capital investments, a boom in building and public works, and an increased tourist trade. An agricultural crisis raised foodstuff prices considerably, while the nation-wide oil strikes during the summer contributed to a business recession which continued throughout the rest of the year. Various government emergency measures failed to remedy the situation. Politically, the year opened with a split over the attitude to be taken towards Leon Trotsky when he entered Mexico in January. On Feb. 9, President Cárdenas issued an amnesty of all political exiles, except Calles, the former president. In the July primaries, the National Revolutionary Party (the official party) won a heavy majority in Congress. In August, the minister of agriculture, Saturnino Cedillo, last remaining Calles partisan in the cabinet forced out of office, began raising a private army. President Cárdenas proceeded against him with Federal troops, but no open clash occurred. In September, the president declared the results of the first half of his six-year term to have been: railway nationalization; bolstering of the nation's oil economy with steps towards nationalization of that industry; increased agricultural production as a result of the continuation of land divisions among the agrarian workers; and a gold reserve covering almost 40 per cent. of the outstanding banknotes. The Church problem passed 1937 without violence except in some States where local persecutions were continued, and the president himself adopted a conciliatory policy towards religion.

In June, Cárdenas unexpectedly moved to nationalize the consolidated railways and run them for public service instead of private profit. Outstanding among his activities was a land policy of expropriation and distribution of land among the peasants, which included the expropriation of the henequen plantations of Yucatan in the summer. During President Cárdenas's first three years, ending in 1937, 5 million acres were expropriated for the benefit of more than 500,000 landless peasants. Approximately 2,500,000 peasants were still without land. The redistributed land was placed in the hands of separate co-operative units closely associated through the National Bank of Ejido Credit, the government's chief agent in this project, and thus formed a huge collective farm.

The petroleum problem became active again during 1937. In May, 18,000 members of the Mexican Syndicate of Petroleum workers struck against 17 foreign-owned oil companies, paralysing the nation's $500 millions petroleum industry. The strike was lifted only after President Cárdenas persuaded the workers to submit their demands to a Federal conciliation board. In August, a special commission ordered wages to be increased to a 4·90 peso minimum, and a maximum 40-hour week. The entire year was marked by a bolstering of the nation's oil economy with steps suggesting nationalization of the country. The government's avowed intention was to throw off the yoke which British and United States oil imperialism had maintained in a stranglehold on Mexico's petroleum. On Dec. 18 salaries of Mexican petroleum workers were ordered to be increased by about one-third. This affected chiefly the large British and North American companies, and the latter protested their inability to pay the increases to meet the 1,500,000-pesos strike wages. Discussions failed to disclose a solution. An additional complication arose from differences between the status of British and North American companies, with the former agreeing to pay 15 to 35 per cent. royalties to the government in return for the privilege of developing the new Pozarica field. This arrangement, it was prophesied, would bring a shift of Mexican oil trade to Great Britain at the expense of the United States.

During the year Mexican foreign relations were generally friendly, despite the government's strong anti-foreign oil policy. The government expressed itself strongly in favour of the elected government of Spain as the legitimate government, and received and aided Spanish war orphans. Mexico continued to be a centre for political exiles from all parts of America. On Dec. 21 ratifications were exchanged with the United States for the nullification of article 8 of the Gadsden Treaty of 1853, under which that country held rights which technically infringed upon the sovereignty of Mexico.



Keystone]

MEXICO CITY. A VIEW OF THE MAIN PLAZA

Trade and Communication.—Mexico's external communications are by steamship service; by three main railways to the United States, and one to Guatemala; by increasingly important air transport routes; and by highway. There are over 15,000m. of railways. Construction of 1,612km. of additional railway in four main schemes, at an estimated cost of 150 million pesos, was continued during 1937. Highway construction, under the six-year plan, promises to revolutionize Mexican internal communication. The main arteries are: the 1,050m. Nuevo Laredo-Acapulco highway, opened in 1936, and the 2,700m. Nogales-Chiapas highway, a link of the Pan-American highway, construction of which was begun in 1937, with completion, at a total cost of 240 million pesos, promised by the end of 1938. The national petrol tax, yielding 31,306,925 pesos in 1936, is devoted exclusively to highway development. In 1937 tentative plans were announced for construction of five cargo vessels for the development of trade on the west coast. Opening of new airways under government subsidy is being pressed. In 1936 exports totalled 775,313,330 pesos, of which mineral products, principally petroleum, silver, gold, and lead, constituted 49 per cent. with a further 25·75 per cent. in gold and silver bullion. In the first half of 1937 exports increased in value 5 per cent. The principal customers are the United States and Great Britain. In 1936 imports totalled 464,142,705 pesos, with machinery, automobiles, and other manufactured goods the principal commodities. The first five months of 1937 imports increased 38 per cent. The United States supplies over 60 per cent. of the imports. The relative increase in imports was officially ascribed to heavy purchases of machinery, $38 millions for government account alone in the first nine months of the year.

Agriculture and Mining.—Resources are mineral and agricultural. The 1936 petroleum oil output was 40,400,000 barrels. In the first eight months of 1937 it was 30,250,000 barrels, but strikes caused a material decline later. Mexico is also a leading producer of silver, as well as gold, copper, lead, zinc, and other minerals. As the principal crop, corn, is the country's chief food source, Mexico is almost agriculturally self-sufficient. Cotton has recently come to the fore. Important exports are coffee, henequen, bananas, and chickpeas.

The monetary unit is the peso (value approx. 1*s.* 2*d.*). The budget for 1937 was for 333,220,689 pesos, with receipts estimated at 330,613,642 pesos. Actual receipts for the first eight months of 1937 were 33 per cent. in excess of estimates. Urban education is supported by the States with total 1937 budgets of 21,994,839 pesos ; rural education, by the national government. The National Autonomous University of Mexico, at Mexico City, and several lesser Universities provide higher education. The army and navy personnel numbers 49,485. The navy includes four gunboats and 25 other vessels. The 1937 budget provided 80,285,165 pesos for army and navy. (L. W. BE.)

MEXICO CITY, capital of Mexico, in the valley of Mexico, on the south central plateau ; area, 15sq.m. ; pop. (official est. 1935) 1,029,068. The administration of the city is controlled by the Federal government through the governor of the Federal district. The city in recent years has expanded, absorbing the adjacent cities, Tacubaya, Mixcoac, and Tacuba. A £1 million municipal waterworks system utilizes mountain springs for an abundant fresh-water supply. Mexico City and its immediate vicinity abound with historic sights which attracted over 100,000 tourists in 1937. Touring has increased tremendously since the completion, in 1936, of the Nuevo Laredo highway from the United States border. Building permits during 1937 showed a notable increase over the preceding year.

MICHIGAN : *see* UNITED STATES OF AMERICA.

MIDDLE CONGO : *see* FRENCH EQUATORIAL AFRICA.

MIDWAY ISLANDS, a group of two small islands and several sand islets, in lat. 28° 13′ N., and long. 177° 23′ W., 1,149 miles north-west of Honolulu, belonging to the United States of America. Sand Island is about 850 acres ; maximum height above sea level, 43ft. Eastern Island is about 328 acres and very low. Sand Island is the site of a commercial cable station, and Pan-American Airways are allowed temporary commercial air service facilities there for their trans-Pacific airline operations.

MILK : *see* DAIRY FARMING.

MILK MARKETING BOARD : *see* MARKETING BOARDS IN GREAT BRITAIN.

MILLS, OGDEN LIVINGSTON, American politician ; born Aug. 23, 1884 ; died in New York, Oct. 11, 1937. In 1910 he became treasurer of the Republican County Committee of New York County, and in 1914 was elected to the State Senate. After serving in France for 19 months, he became a member of the U.S. House of Representatives, and in 1926 was defeated by Alfred E. Smith in a contest for Governorship of New York. The next year, however, he was appointed assistant secretary of the Treasury, a post which he held until he became full secretary in Feb. 1932. With the close of the Hoover administration in March 1933, he retired from active participation in party affairs, but he continued to urge reforms, and was occasionally mentioned as a possible presidential candidate.

MINERALOGY. In noteworthy articles during 1937 Bayley discussed mineralogy's contribution to science and to industry (*American Mineralogist,* May) and Winchell reported on his zeolite researches (*ibid.,* February). A significant study of silicosis was made by Emmons and Wilcox (*ibid.,* April). In three papers the classification of natural silicates was treated (*ibid.,* May, Berman ; November and December, Swartz). Gratton described recently developed technique in mineralography, while the accessory minerals of igneous rocks were studied by Taylor (both, *ibid.,* May). Tilley discussed the paragenesis of kyanite-amphibolites, and Anderson and Payne described the magnesium-zinc-spinels of Ceylon (both *Mineralogical Magazine,* September). Spencer reviewed the tecktite problem (*ibid.,* March).

Gem Minerals.—Interest in authoritative information about gem stones was continued by wholesale and retail gem dealers. Through the recent publication in Great Britain, Germany, and the United States of books on gems, adapted to the general reader, public interest has been aroused. Steady growth of the amateur lapidary movement is also to be noted.

Blue zircon, often called the ' gem of mystery ', continues its popular appeal. Its occurrence, physical and optical properties, and methods of heat treatment were discussed by Anderson, Chudoba, and Payne (*Gemmologist,* London) ; and by Eppler, Brauns, and Wild (*Deutsche Goldschmiede Zeitung*). Eppler also submitted data on the ideal cutting of aquamarine and other varieties of beryl, of tourmaline, and of citrine or yellow quartz, erroneously called ' topaz ' in the trade (*ibid.*). He believes that stones cut according to his directions possess greater brilliancy. (*See* also GEMS AND PRECIOUS STONES.)

Roebling Medal.—A significant event in American mineralogy was the first award of the Roebling Medal of the Mineralogical Society of America to Professor Charles Palache at Washington, D.C., Dec. 29. Professor Palache has been a member of the Department of Mineralogy of Harvard for 40 years, and is a past-president of the mineralogical and Geological Societies of America. As a tribute, the special May number of the American Mineralogist, which included 35 articles totalling 435 pages, was dedicated to him by friends and former students.

Three widely recognized leaders in mineralogical science died in 1937. Alexander H. Phillips died on Jan. 20 at the age of 71. For 49 years he was a member of the faculty of Princeton university. In 1931, he was president of the Mineralogical Society of America. On Jan. 28, Reinhard Brauns of the University of Bonn, Germany, died at the age of 75. He was noted for his many articles on the optical character of crystals, on gems, and on the rocks and minerals of the volcanic areas of the Rhineland and Laacher See District. On Dec. 12, Arthur Hutchinson, formerly Professor of Mineralogy at Cambridge University, England, died at the age of 71. He was a past-president (1921–24) of the Mineralogical Society of Great Britain. (E. H. KR.)

MINERAL PRODUCTS. Under this heading is included a table, with notes, of some of the principal mineral products (metallic and non-metallic) of the world. For details concerning COAL; COPPER; DIAMONDS; GOLD; IRON AND STEEL; PETROLEUM; RADIUM; SILVER; and also NITRATES; POTASH; and PHOSPHATES, see under the individual headings.

An interesting recent development, not recorded in the table, is the growing commercial use of columbium (or niobium), which from little more than a laboratory and museum curiosity, has within five years become a regular commercial product, with an output of some 500–600 tons of concentrates yearly, most of which comes from Nigeria. Occurring chiefly as a discarded impurity in certain tin ores, the tailings piles are now being reworked for their columbium content, which is raised to 45–55 per cent. by ore dressing. The original application which led to the commercialization of the metal was its addition to stainless steels for high-temperature work, for the prevention of intergranular corrosion. Another important development is a columbium-treated welding rod, which makes a weld that does not require heat treatment to develop its maximum strength.

MINERAL PRODUCTION OF THE WORLD

Product	Total production (year in parenthesis)	Leading producing countries (by percentage or total amounts where available)	New or extended uses for product
Aluminium[1]	362,200 metric tons (1936)	U.S.A. (102,027), Germany (95,000), U.S.S.R. (36,000), France (27,000)	Lightening the weight of all types of transport equipment, *e.g.* trains, aircraft, bridge floors, mine cages, etc.
Antimony	33,800 metric tons (1936)	China (70%), Mexico (10%), Bolivia (7%)	Rearmament demands.
Barium	750,000 tons of *ore* chiefly sulphate or carbonate (annual estimate)	—	In alloys for making sparking plug terminals; in radio tubes, to remove last traces of oxygen.
Bauxite	2,450,000 metric tons (1936)	France (648,500), U.S.A. (377,976), Hungary (329,000), Italy (314,870)	About 60% of output used for production of aluminium; remainder for chemicals, abrasives, cements, and refractories.
Cadmium[2] (as by-product)	4,000 tons	U.S.A. (50%), Mexico, Canada, Belgium, Australia	For electroplating; as an anti-corrosive and for cadmium alloys used in motor bearings.
Chromite	983,000 metric tons (1936)	U.S.S.R. (220,000), S. Rhodesia (181,573), Turkey (163,880), S. Africa (97,248)	Alloy steels, particularly stainless steels; and for non-ferrous chromium alloy.
Cobalt	2,000 metric tons (50% used as metal, 50% in compound form)	Canada (20%), N. Rhodesia, Belgian Congo, and French Morocco	*Metal* used in stellite alloys, with chromium and in alloy steels mainly for permanent magnets. *Oxide* for glass and ceramic industries.
Lead	1,499,700 metric tons (1936) Probable increase for 1937 of about 12%	U.S.A. (362,900), Mexico (218,300), Australia (200,600), Canada (173,800)	—
Magnesium	Uncertain. Estimates from 15,000–50,000 metric tons	Germany, U.S.A., France, Switzerland, United Kingdom, etc.	Light metal alloys.
Manganese	5,234,000 metric tons (1936)	U.S.S.R. (3,002,000), India (826,000), Gold Coast (417,000)	—
Mercury	3,900 tons (1936)	Italy (1,476), Spain, U.S.A.	Rearmament demands.
Molybdenum	8,800 metric tons (1936)	U.S.A. (about 88%), Mexico 6%, Norway 4%	New development in alloy steels and cast iron.
Nickel	88,000 tons (1936)	Canada (77,000 tons; 1937 estimate 100,000), New Caledonia (5,000 tons)	Nickel alloy steels, especially stainless steels; rearmament demands.
Platinum	Russian figures not available, and world total therefore impossible to estimate	Canada (131,600 oz. in 1936), Colombia (35,000–55,000 oz.), South Africa (26,000 oz. approx.)	—
Tin[3]	180,000 long tons (1936)	Malaya6 (6,700), Netherlands Indies (31,500), Bolivia (24,100), Siam (12,600)	—
Titanium (from ilmenite and rutile)	Rutile 1,000 tons; ilmenite 200,000 tons (annual estimate)	India, Norway	Alloying agent in steel; recent development of titanium pigments for paint and ceramic work.
Tungsten	22,000 tons (1935)	China (37%), Burma (24%), Malaya (10%), U.S.A.	Rearmament demands.
Vanadium	—	Peru, S.W. Africa, N. Rhodesia, U.S.A.	A growing demand for vanadium catalysts in the production of sulphuric acid and certain organic compounds, as well as in the ceramic and dyeing industries; metallurgical uses.
Zinc[4]	1,497,100 metric tons	U.S.A. (474,600), Belgium (197,700), Canada (137,600), Germany (136,400)	Increased uses for die casting and electrolytic galvanizing.
Asbestos	Nearly 500,000 metric tons (1936)	Canada (54%), S. Rhodesia (10%), S. Africa (4%), U.S.S.R. (26%).	—
Diatomite (kieselguhr)	Approx. 180,000 tons (annual estimate)	U.S.A. (100,000), Germany (25,000), Denmark (25,000), Algeria (12,000)	Heat insulator; filter aid in many types of chemical industry; filler in paints, varnishes, enamels, rubber; an admixture in concrete; a carrier for insect poisons.

[1] A recent development in the metallurgy of aluminium is its commercial application as a coating for steel to give a product with the strength of steel and the high corrosive resistance of aluminium.

[2] Since cadmium is obtained only as a by-product in the treatment of residues from zinc and lithophone plants and from the fumes collected in lead and copper roasting plants, the cadmium market is faced with a large and increasing new demand, for which the metal can be obtained only by taking it away from some previous type of consumption, since the possibilities of increasing the present supply are comparatively small; as a result, most of the metal now used in motor bearings has been diverted from electroplating, the former being able to stand a higher price than the latter, for which cheaper substitutes are available.

[3] The output as regulated by the International Tin Cartel was fixed at a quota of 100 per cent. of the new standard capacity for the first quarter of 1937, and raised in subsequent quarters to 110 per cent. In the first quarter of 1938 it was fixed at 70 per cent., with special provisions for an extra 10 per cent. for Malaya, the Netherlands Indies, and Nigeria, to offset tonnage deficiencies of Bolivia, the Belgian Congo, and French Indo-China.

[4] New technological developments centre largely in the expansion of the recently developed vertical retort smelting and of electrolytic recovery plants.

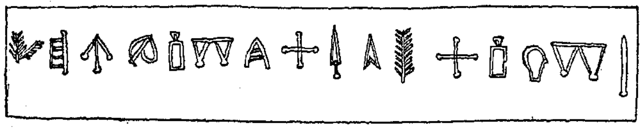
Product	Total production (year in parenthesis)	Leading producing countries (by percentage or total amounts where available)	New or extended uses for product
Feldspar . .	Approx. 375,000 metric tons (1936)	U.S.A. (more than 50%), Sweden, China, Norway	Ceramic and glass industries.
Fluorspar .	Approx. 400,000 metric tons	U.S.A. (33⅓%), Germany, U.S.S.R., United Kingdom	Iron and steel industry ; glass and enamel ; hydrofluoric acid and its derivatives.
Lime (as superphosphates)	13,700,000 tons	U.S.A. (3,070,000 tons), Japan (1,450,000), U.S.S.R. (1,250,000)	—
Magnesite .	Approx. 1,500,000 tons (1937)	U.S.S.R., Austria, U.S.A., Greece	—
Mica . .	40,000 metric tons (rough estimate for 1936)	U.S.A. (19,600), India (9,000), U.S.S.R. (9,000), Canada (640), South Africa (500), Madagascar (450)	*Sheet Mica :* electrical insulation, stove glazing, gramophone records, lamp chimneys, etc. *Scrap Mica:* the roofing industry, wallpaper, paints, rubber.
Pyrites[5]. .	8,340,000 metric tons (1935)	Spain (27% in 1935, but production decreased owing to civil war), Japan (probably *now* the largest producer), Italy, Norway, U.S.S.R., U.S.A.	—
Salt . .	31,000,000 metric tons (1935)	U.S.A. (23%), U.S.S.R. (14%), United Kingdom (9%), China (8%), Germany (8%)	—
Slate . .	11,000,000 tons	U.S.A., United Kingdom, France, Germany	—
Sulphur[6] .	Approx. 2,500,000 metric tons	U.S.A. (75%), Italy (16%), Japan (6%)	—

MINIMUM WAGE : *see* WAGES AND HOURS.

MINISTERS OF THE CROWN ACT : *see* PUBLIC STATUTES OF THE UNITED KINGDOM.

MINNESOTA : *see* UNITED STATES OF AMERICA.

MINOAN INSCRIPTIONS. A discovery of considerable interest to archaeologists was made in 1937 near the Minoan Palace at Mallia, on the north coast of Crete. This is an extremely well-preserved inscription in Minoan hieroglyphics, consisting of 16 signs, three of which have not hitherto been found elsewhere. The problem of deciphering such inscriptions is, unfortunately, no nearer to a solution.



MINORITIES. There was little improvement in the lot of national minorities in 1937. The growth of extreme nationalism, accompanied by a tendency to abandon the forms of democracy in favour of authoritarian forms of government, weighed heavily upon them ; and there were few countries in which their members were not regarded and treated as second-class citizens. ' National solidarity ' was an all too common aim, which meant, not winning the loyalty of all citizens by liberal treatment, but strengthening the ruling majority at the expense of the subject minorities.

The chief minority problem of 1937 was undoubtedly that of the Germans in Czechoslovakia (*q.v.*). There the Sudeten Germans, or the 66 per cent. of them that were followers of Henlein, had been enjoying since 1935 the powerful support and sympathy of Germany. The intervention of the Reich, though it forced the Czechs to face the problem, also complicated it, since it converted a purely internal question into an international issue. The Sudeten Germans were thereby drawn into the game of power politics. Once Germany had taken up their cause, any concession which the Czechs might make seemed a concession to Nazism. Nevertheless, Czech statesmen have given proof of their anxiety to deal justly by the Sudeten Germans. In February the Czechoslovak government granted five out of seven demands presented to them by the ' activist ' German parties (who are anti-Nazi, belong to the Government Coalition, and represent one-third of the total German population). A wide agreement was drawn up embracing the general principles of minority treatment. The Czechs insisted that they were prepared to go to the limit of concessions that would not endanger the State. What they were not prepared to do was to grant the *Völkische* autonomy demanded by Henlein, which in their view would mean the disruption of Czechoslovakia. Some results have been achieved since February, but progress is necessarily slow, because the vital condition, a better psychological atmosphere, is still absent. Until the international situation improves, that condition is unlikely to be realized.

On July 15, the Geneva Convention, which in 1922 had established an international régime of supervision and arbitration in Upper Silesia, expired and its valuable machinery of conciliation disappeared. For 15 years it had successfully performed a task of great difficulty, and must be accounted one of the positive successes of the League. In November Germany and Poland signed an agreement that guaranteed for their respective minorities a bare minimum of cultural and general rights. The rights so covered fell far short of those enjoyed by, for instance, the Sudeten Germans.

In September the Hungarian minority in Rumania presented a petition to the League against a circular which had been sent by the Rumanian Minister of Commerce to some 72 firms requiring them to replace a large proportion of their employees by full-blooded Rumanians. The petition achieved its object in as much as the Rumanian Government voluntarily withdrew the order.

Finally, all over eastern Europe, but especially in Poland and Rumania, the year was notable for recurrent manifestations of anti-Semitism. (D. Ss.)

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[5] A recent important technical development in the burning of pyrites is the so-called flash roasting process, in which the finely divided material is burned while suspended in a blast of air.

[6] Recently progress has been made in the recovery of elemental sulphur, in the roasting of sulphur-bearing ores.

MISSISSIPPI: *see* UNITED STATES OF AMERICA.

MISSISSIPPI RIVER SYSTEM. The Mississippi River rises in Lake Itasca, Minn., and flows in a general southerly direction 2,434 miles to the Gulf of Mexico. From Cape Girardeau, above Cairo, to the Gulf of Mexico, it flows through a fertile alluvial plain, about 50 miles wide and 600 miles in length. Without levees, some 20 million acres are subject to overflow by river floods late in the crop season. The principal tributaries of the Mississippi are the Ohio, entering the river at Cairo, Ill.; the Missouri, entering above St. Louis, Mo.; the Arkansas and the White, entering the Lower Mississippi above Arkansas City, Ark.; and the Red, connecting with the lower river near Angola, La. The basins of these tributaries, with that of the Upper Mississippi, are the chief sources of flood waters of the Lower Mississippi. The entire area drained by the system is about 1,240,000 square miles, equal to one-third the area of the United States.

The Lower Mississippi.—Works for the improvement of the channel have been executed at various places below Cairo, and levees built for flood control from Rock Island, Ill., to near Head of Passes, La., 484 miles above to 1,070 miles below Cairo. Effective revetment below Cairo is now in place on 144 miles of river-bank; and 35 miles of permeable dikes, with 10 miles of sand dikes for channel regulation, are complete. The 2,934-mile levee system, with earthwork aggregating 996,616,383cu.yds., protects a total of 27,850sq.m. of land against maximum known floods. During 1937, there were 37,295,000cu.yds. of material placed in the levees. The Bonnet Carre spillway structure was operated for the first time during the flood season of 1937. The Bird's Point New Madrid floodway was also brought into successful operation then. A navigable channel is available 9ft. deep and 300ft. wide for a distance of 741 miles below Cairo, and a depth of not less than 35ft. several hundred feet wide, for the remaining 240 miles to the Gulf of Mexico.

Basins of the Red and Arkansas Rivers.—Six locks and dams on the Ouachita and Black Rivers provide a depth of 6½ft. at low water, a distance of 351 miles from the Red River to Camden, Ark.

Missouri River Basin.—Although improvement of the Missouri River to date has secured 6-ft. navigation from the Mississippi to Kansas City and lesser depths upstream, the storage available in the future from the Fort Peck reservoir is expected to furnish a desirable increase. The Fort Peck dam and reservoir are under construction with the main purpose of establishing 8- to 9-ft. navigation below Sioux City, Ia. The project will also contribute protection in the control of flood waters.

The Upper Mississippi.—Below Alton, Ill., a 9-ft. channel depth is maintained by open river works. Above this point, for the purpose of securing similar navigation depths, a system of 26 low-head dams and locks is under construction.

The Ohio River Basin.—The Ohio River has a total length of 981 miles. All the structures of a nearly completed system of 47 locks and dams are in operation, providing 9-ft. navigation throughout the length of the river. The fixed dam under construction at Gallipolis, Ohio, will replace three existing dams.

Flood Control.—The general Flood Control Act of June 22, 1936, establishes, for the first time in the history of the Federal government, a definite flood control policy which provides for Federal participation in the construction of economically justified projects in co-operation with States, political subdivisions thereof, or other local interests. Improvements under construction include the Sardis dam, Yazoo River basin; the Conchas and Fort Supply dams in the Arkansas basin; the Fort Peck dam, on the Missouri River; the Tionesta and Crooked Creek dams in the Alleghany Valley; and the Tygart River dam, West Virginia. The Muskingum Valley system of 14 flood-control reservoirs, in south-eastern Ohio, is 81 per cent. complete.

Expenditure.—For the improvement of the Mississippi River and its tributaries, including work completed during the fiscal year of 1937, a total expenditure of $1,363,700,000 (£280,221,925) has been made.

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MISSOURI: *see* UNITED STATES OF AMERICA.

MOHAMMEDANISM: *see* ISLAM.

MOLA, EMILIO, Spanish general; born in Cuba in 1887; died June 3, 1937. All his life was spent in the army. In 1926 he was made chief of the colonial forces in Morocco, and in 1931 was summoned to be director-general of the police of Spain. He soon resigned, however, owing to the excitement following police firing upon a student demonstration. In 1935 a Right government returned him to his Moroccan post, but he was again dismissed in 1936 by a Left government. He was in virtual exile until he led the insurgent troops into Spain from Morocco with General Franco. He was commander of the Northern Army and second in command to General Franco of the insurgent forces in the civil war. He was killed in an aeroplane crash while flying over the northern front.

MOLOTOV, VYACHESLAV MIKHAILOVICH (1889–), President of the Soviet Union Council of People's Commissars since 1930, and a member of the Politbureau (in which the real power resides), was born at Kazan, became a member of the Communist party in 1906, and by 1909 had been arrested and exiled. After much work as a Bolshevist journalist he played a prominent part in the October Revolution, 1917, and became closely associated with Lenin; from 1920 to 1921 he was secretary of the Central Committee of the Party in the Ukraine, and from 1922 that of the same organ of the U.S.S.R., which holds complete legislative and executive power when the All Union Congress is not in session. Since holding high office, M. Molotov has always ranged himself on the side of moderation, and has been particularly vocal on behalf of international peace; it was he also who, in 1935, proposed, as the spokesman of the Council, the remodelling of the Constitution that came into effect at the close of 1937.

MOLUCCA: *see* NETHERLANDS INDIES.

MONACO. A small principality on the Mediterranean; area, *c.* 8sq.m.; population (1933) 22,153, of whom 1,750 were native Monacans. Its towns are Condamine (10,700), Monte Carlo (9,430), and Monaco (2,020).

Elections took place in July 1937 for the Conseil National and the Conseil Communal. Lists of candidates presented by the Union Démocratique party, presided over by the mayor of Monaco, were elected in their entirety.

M. Émile Roblot, honorary prefect, was nominated on July 16, 1937, by His Highness the Prince of Monaco (Louis II; *b.* 1870; succ. 1922) to succeed M. Bouilloux-Lafont in his duties as minister of state of the principality, that is to say, head of the government of Monaco.

MONGOLIA (Inner and Outer) is a vast sparsely populated tableland occupying about 1,000,000sq.m. in north-eastern Asia. It is bounded on the north by Asiatic Russia, on the west by Chinese Turkestan, on the east by Manchukuo, on the south by China proper. Of the two component parts of Mongolia, Outer Mongolia (622,744 sq.m.) is greater in extent; but Inner Mongolia (334,100 sq.m.), that is the three Chinese provinces of Chahar, Suiyuan, and Ningsia, is more thickly populated. The population of Outer Mongolia is usually estimated at 750,000–800,000, while there are about 1,500,000 Mongols in Inner Mongolia.

Although the peoples of Inner and Outer Mongolia are similar in race, language, and habits, these two regions are separated by a long stretch of the Gobi desert, and for almost two decades have been under quite different political influences. The history of the two should, therefore, be considered separately.

History: Inner Mongolia.—A feature of life in Inner Mongolia has been the rapid development of Chinese colonization, especially along the line of the Peiping-Suiyuan railway. This led to much friction between the Chinese agriculturists, who wished to settle on the land, and the nomadic Mongols, who desired to keep large open spaces for the pasturing of their flocks and herds. There were occasional Mongol riots and revolts; but the Chinese officials, on the whole, maintained the upper hand until a new factor entered into the situation as a result of the creation of Manchukuo. Japanese military influence began to spread from Manchukuo into Inner Mongolia, and the Japanese were quick to take advantage of the antagonism between the Mongols and the Chinese.

A so-called Mongolian Autonomous Political Council, with headquarters in Pailingmiao, came into existence under the leadership of Prince Teh, a Chahar Mongol. Prince Teh's policy was to hold the balance between Japan and China, endeavouring to obtain the maximum degree of Mongolian autonomy; but his hand was largely forced by the sweeping Japanese advance into North China in the summer of 1937. The Japanese had already obtained an adherent in Li Shou-hsin, a Manchukuo Mongol who commanded an irregular force which had taken over several counties of Chahar in the winter of 1935–36. Mongol cavalry co-operated with the Japanese in their advance to Paotow, railhead of the Peiping–Suiyuan railway. At the end of October, an Autonomous Government of Mongolia was formed, headed by Prince Yun, a leader of the Suiyuan Mongols, with Prince Teh as vice-chief of State. The territory of the new State provisionally includes Suiyuan and the northern part of Chahar. It is provided with Japanese military and political advisers.

Outer Mongolia.—The Republic of Outer Mongolia came into existence as a result of the invasion of this region by Soviet troops waging war against the White leader, Baron Ungern-Sternberg, who had made Outer Mongolia a base of operations. With this Soviet aid a group of Mongolian revolutionaries established themselves in power; and since 1921, when the so-called People's Revolutionary Government was established in Urga (now renamed Ulan Bator), the capital of Outer Mongolia, that territory has been in very close relations with the Soviet Union. Non-Soviet foreigners have been entirely barred from the country for the last few years, and almost all recent information about it is based on Soviet sources. The régime in Outer Mongolia has been closely patterned on Soviet models, although with some allowance for the primitive economy and religious prejudices of the country. A pact providing for mutual assistance in the event of invasion was signed by the Soviet and Outer Mongolian governments at Ulan Bator on March 12, 1936.

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Canadian Official News Bureau]

MONTREAL, LOOKING SOUTH TOWARDS THE NEW JACQUES CARTIER BRIDGE, CROSSING THE ST. LAWRENCE RIVER

Tannu-Tuva, to the north-west of Mongolia, has been an independent republic under Soviet protection since the Russian occupation of Urga. Area, *c.* 64,000sq.m. ; population, *c.* 65,000, of whom Tuvinians number about 50,000. The elective 'Great Huruldan' itself elects a 'Little Huruldan', the legislative body, whose president is M. Tonduk. The capital is Kysylchoto.

MONTANA: *see* United States of America.

MONTE CARLO: *see* Monaco.

MONTREAL, in the province of Quebec, Canada, is situated on an island at the confluence of the Ottawa and St. Lawrence rivers, approximately 1,000m. from the Atlantic ocean and 2,760m. from Liverpool. It is at the head of ocean navigation and the terminus of lake vessels. It is served by three canal systems: the St. Lawrence canals, 1,230m. to the Great Lakes; and eastern United States canals, via the Richelieu river and Lake Champlain, 127m.; and the Ottawa river canals, 119m. The head offices of the Canadian Pacific railway and of the Canadian National railways are situated at Montreal. Population of the city (Federal census, 1931), 810,925 ; of greater Montreal, including its suburbs, 973,637. In 1936 the estimated population was: city of Montreal,1, 233,623; greater Montreal, 1,406,596. Greater Montreal is governed by a metropolitan commission, the majority of whose members are appointed by the city council of Montreal. The city council consists of 35 aldermen. The mayor is elected by the city as a whole.

Control of education is divided between the Catholic School Commission of Montreal and the Montreal Protestant Central School Board. The method of appointing members of the Catholic School Commission of Montreal was modified during 1937. A commission has been appointed by the Provincial government to examine and report on the Protestant school situation.

The port of Montreal is the largest in Canada. The number of sea-going vessel arrivals in 1936 was 2,051. Net registered tonnage was 5,728,293 ; value of merchandise exported, $208,605,108; and value of merchandise imported, $151,608,469. For 1936, the amount of building permits issued stood at $6,938,943 ; bank clearings at $5,386,188,857 ; and bank deposits at $10,150,016,770. The assessed value of real estate is $1,238,995,256.

(J. A. Ma.)

MONTSERRAT: *see* Leeward Islands.

MORAL PHILOSOPHY: *see* Ethics.

MORE, PAUL ELMER, American critic and author ; born in St. Louis, Mo., Dec. 12, 1864 ; died at Princeton, N.J., March 9, 1937. For a biographical note *see Ency. Brit.*, vol. 15, p. 794. From 1921 to 1933 he was lecturer in Greek philosophy and the history of Christian thought at Princeton university. In association with the late Irving Babbitt, of Harvard university, he led the movement known as the New Humanism, which glorified free-will and sought to re-establish a spirit of intellectual individualism. His most recent works included *Christ the Word*, 1927 ; *The Demon of the Absolute*, 1928 ; *The Catholic Faith*, 1931 ; and *The Sceptical Approach to Religion*, 1934.

MORMONS (or **Latter Day Saints**). During the whole history of the Church of Jesus Christ of Latter Day Saints, its members have been disciplined in the principle that the duty of the Church and its membership is to see that no member suffers from need for the necessities of life. The declared ideal of the Church is to make 'every man equal according to his family, according to his circumstances and his wants and needs'. Under Church law the first Sunday in every month is a fast day. Members are to give for the support of the Church poor and needy the food (or its price in money) that, not fasting, they would have eaten. Obedient to these principles, the Church has set up a Church Security Plan, to provide the necessities of life for needy members and to rehabilitate civically, morally, and spiritually those who have suffered during the depression. To rebuild thrift and self-respect, all employables receiving aid are to give some service therefor. Compensation paid to persons helped is based, not upon a daily wage, but upon the daily need. A man with a family of five receives for his service what his family of five needs ; a man without a family, doing the same work, receives only what he himself needs.

Effort is made to put the employables back into the industrial life of the country, both as employees and on their own account. Various work projects are established for the collection or production of food-stuffs, clothing, fuel, shelter, for the beautification of Church property, and for the betterment of homes of the employables. Community projects are created and assisted. The second purpose of the plan is worked out by bringing the unemployed into local social and church activities and into the civic and cultural life of communities.

In 1937, there were in the United States 1,392 churches with a membership of 678,203 ; while the reorganized branch of the Church had 575 churches with 99,492 members. In Great Britain there were 82 churches.

MOROCCO. The present article is concerned with the French zone only of this north-west African country. (*See also* Spanish Morocco and Tangier.) The reigning Sultan, Sidi Mohammed (succ. 1927), is the nominal ruler, but the zone is effectively governed by the French resident general and commander-in-chief, General Noguès. The area is *c.* 200,000sq.m., and the population 6,296,000. The normal French system of education is operated for both Europeans and natives, but the percentage of native illiterates is high. The capital is Rabat (pop. 83,000). (X.)

History.—When General Noguès took over the position of resident-general in Oct. 1936 from M. Peyrouton, he found Morocco in the midst of a severe economic crisis resulting from the prolonged drought. The region south of the Atlas (the Sous) was particularly affected. Events in Spain naturally had a considerable repercussion in the French zone. The very fact that in a Spain that had been conquered by their ancestors, Moroccans were now fighting against European soldiers created a dangerous precedent and disturbed the *morale* of the population.

General Noguès first adopted a series of measures to alleviate the distress of the natives and the pressure upon the small farmers. From Feb. 1937 onwards, reforms made themselves felt. The *Comitê d'Action Marocaine* was dissolved (May 18) and several newspapers were suppressed. Nationalist and Communist agitators organized (Sept. 1) disturbances at Meknes, usually a very peaceable town (10 killed). At the end of October, serious disturbances took place at Fez, Casablanca, Marrakesh, and Oujda. Troops occupied the native town of Fez. The principal leaders were arrested and deported. Allal el Fassi was banished to Gabon. These energetic measures re-established order, and the resident-general was able to devote himself to the relief of famine and distress.

On Oct. 29 there left Port Lyautey for the first time a vessel laden with 1,000 tons of crude oil.

The negotiations entered into with Great Britain for the suppression of the capitulatory regime in Morocco terminated in the agreement of July 29. (R. Pin.)

Trade and Communications.—Agriculture is the chief industry; and the principal minerals are phosphates, lead ore, and manganese. Imports and exports for 1936 were frs.1,150,502,000 and frs.781,484,000 respectively. At the end of 1935 there were 4,320m. of main and secondary roads. About 1,000m. of railway are in operation or under construction, as well as about 500m. of narrow-gauge railway.

Estimated revenue and expenditure for 1937 were frs.870,069,500 and frs.895,057,570 respectively.

Defence.—Apart from the Sultan's Black Guard, all military forces are drawn from the French Metropolitan and Colonial armies, chiefly African troops, and part of the Foreign Legion.

MORRISON, HERBERT STANLEY (1888–), British politician, was born in East London, and, after being errand boy, shop assistant, telephone operator, and assistant circulation manager of a newspaper, became secretary of the London Labour Party in 1915. In 1920–21 he was Mayor of Hackney, and in 1923 entered Parliament as a labour member for South Hackney; he was rejected in 1924, regained the seat in 1929, lost it again in 1931, and regained it in 1935. He was minister of transport 1929–31, and was made a privy councillor in the latter year. In office he was responsible for many reforms in road traffic regulations, as also for drafting the legislation which resulted in the London Passenger Transport Board. Mr. Morrison's outstanding service to his party, however, has been in the sphere of local government. He was the 'organizer of victory' who created the electoral machine by which the Labour Party secured control, in 1934, of the London County Council and the majority of the Metropolitan Borough Councils, and improved its position in 1937. He has been an L.C.C. alderman and leader of the Council since 1934. As such he has been closely associated with the scheme for a 'green belt' round London, with the decision, after 11 years of controversy, to build a new Waterloo bridge, and with other reforms. Besides numerous pamphlets, he has written *Socialization and Transport* and *How Greater London is Governed.*

MORROW, JAY JOHNSON, American soldier and administrator; born at Fairview, W.V., Feb. 20, 1870; died at Englewood, N.J., April 16, 1937. Graduating from the U.S. Military Academy in 1891, he served as instructor in military engineering at West Point, and in 1901 was sent to the Philippines as military governor of the Province of Zamboanga. He was the engineering member of the Board of Commissioners for the District of Columbia, 1907–09, and during the World War was chief engineer of the 1st American Army and deputy chief engineer of the American Expeditionary Forces, attaining the rank of brigadier-general. He was governor of the Panama Canal, 1921–24 and 1925–29, and was American member of the commission which mediated the Tacna-Arica boundary dispute.

MOSCOW. The capital city of the U.S.S.R. and of the R.S.F.S.R. Population (1936): 3,567,900. *See Ency. Brit.*, vol. 15, pp. 838–41.

With 600,000 workers, the city forms an important industrial centre. Its chief industries are metal-working, machine building, textiles, clothing, and printing. Output in 1936 was 12,133 million roubles. There is a railway junction (11 lines) and air port. Of great economic importance for the town was the opening, in July 1937, of the 128km. long Moscow–Volga canal, through which Moscow became a river port in direct connexion with the Caspian, Baltic, and White Seas.

Planet News]

MOSCOW. THE HOUSE OF THE COUNCIL OF PEOPLES COMMISSARS OF THE U.S.S.R.

In accordance with the Ten Years' Plan of the Soviet government and Communist Party for the rebuilding of Moscow, adopted in July 1935, considerable building activity took place in 1937, and the old-world city of the pre-war period became more and more modernized. Since May 1935, Moscow has possessed an underground railway (Metro), the second section of which, nine and a quarter miles long, was finished in Nov. 1937. A third section is now being built, and is to be opened for traffic in 1939. The number of passengers carried in Moscow by tram, bus, and underground was, in 1936, 2,136·6 millions.

In 1936, Moscow possessed 34 theatres, 65 museums, 79 higher educational institutions with 92,195 students, and 83 technical colleges with 32,097 students; 549,579 children attended elementary and secondary schools.

See Sir E. D. Simon and others, *Moscow in the Making*, London, 1937. (S. Yak.)

MOSLEY, SIR OSWALD ERNALD, 6th Bt. (1896–), British politician; educated at Winchester and Sandhurst; in Parliament 1918–31, as, successively, Conservative, Independent, and Socialist; Chancellor of the Duchy of Lancaster, 1929–30; left the Labour Party, 1931, to found the 'New Party', and later became leader of the British Union of Fascists ('Black-shirts', *q.v.*), from which several of the leading members seceded in April 1937 to form a rival organization. On Oct. 9 'the Leader' was hit by a stone at an open-air meeting in Liverpool, and removed unconscious to hospital. On Dec. 8, after Sir Oswald had appeared in court to give evidence, his assailant was acquitted on the charge of 'wounding with intent to cause grievous bodily harm', but on a second charge of 'inflicting grievous bodily harm' the jury disagreed. In Feb., 1938, the prosecution offering no evidence, the defendant was discharged.

On Oct. 15 damages totalling £20,000 were awarded to Lord Camrose and the Daily Telegraph Ltd. against the printers, publishers, and editor of *Action*, the organ of Sir Oswald's movement, after a libel action in respect of an allegation that Lord Camrose's family had Jewish connexions.

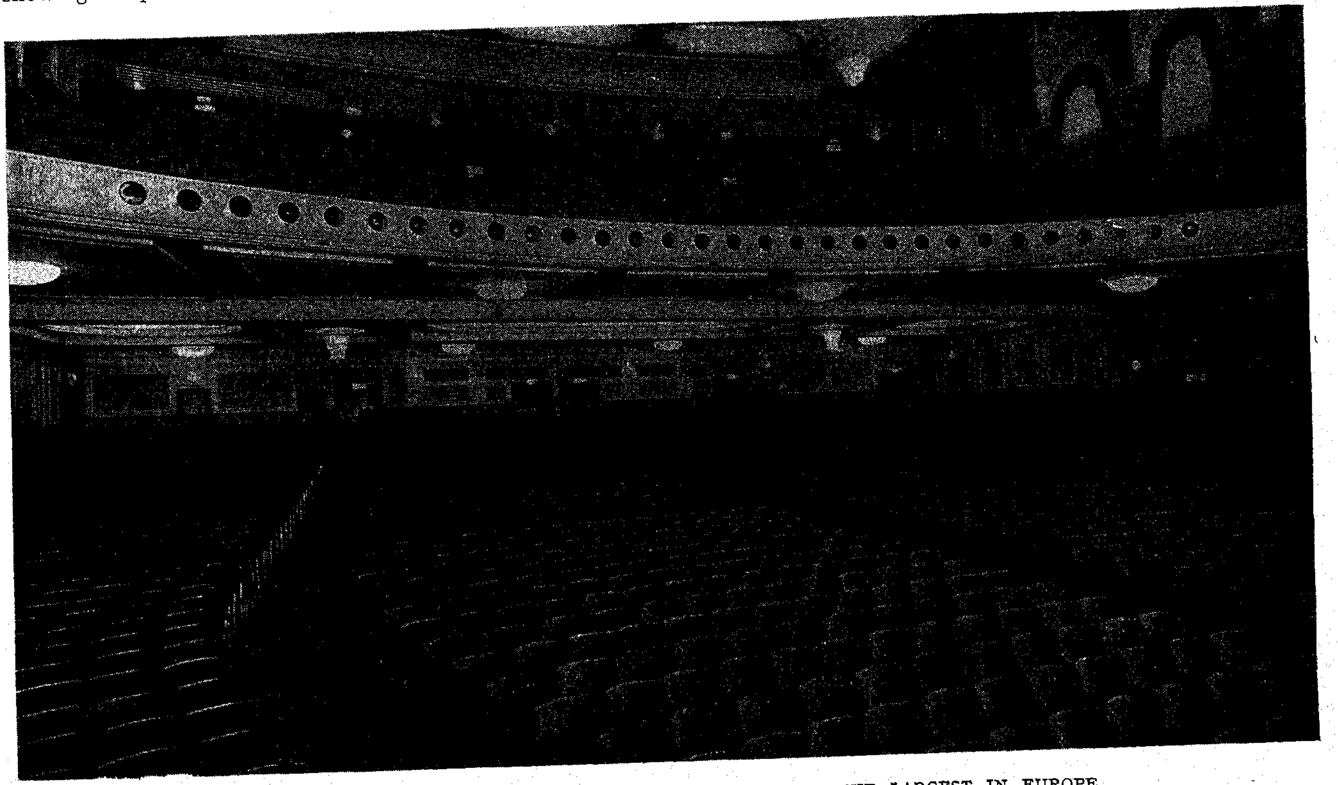
MOTION PICTURES. Through 1937 and emerging into 1938, the once self-contained and self-sufficient motion picture institution found itself intimately integrated with the whole pattern of world affairs, and in a world of tangled politics and finance. Over most of the globe the screen had by the close of the year become a concern or instrument of government. Only in the British Empire, the United States, and Scandinavia was the motion picture a substantially free medium of expression. Controls and restrictions in other lands varied from coercive taxation to complete bureaucratic operation, as in Soviet Russia. Most of the complexities of the screen's social and political position revealed by the developments of 1937 were to be considered consequences of the acquisition of the spoken word, which raised linguistic barriers, racial and sectional considerations, and deeply invaded the previous complete internationalism of the art.

The end of 1937 found Mickey Mouse in bad political odour in Yugoslavia, suspect of fostering revolution, and at the same time the only American screen figure welcomed on the State-ruled screens of Russia. Shirley Temple, première box office star of the world screen, was barred in Germany as a baleful influence on the young. Gracie Fields, Britain's popular stage and film comedienne, was honoured by the award of the Order of the British Empire. Original versions of American pictures were permitted in but one cinema of 200 seats in Italy, and in France in five theatres in Paris and five in the provinces. All other showing required 'dubbed' versions, bearing sound tracks in the native languages. In Italy, all pictures in any way to be deemed favourable to Great Britain were barred. In France, the Russian Soviet product, previously barred, was admitted by the Popular Front government.

An annual poll of cinemas in Great Britain, Canada, and the United States, conducted by *Motion Picture Herald*, found showmen of the English-speaking world listing the following as preferred by their audiences: Shirley Temple, first; Clark Gable, second; Robert Taylor and William Powell, third; Gary Cooper, fourth; Gracie Fields, fifth; Bing Crosby, sixth; Fred Astaire, Ginger Rogers, and George Formby, seventh; Jane Withers, eighth; Jeanette MacDonald, ninth; and Sonja Henie, tenth.

Viewed in the large, the world map presented a picture of efforts against dominance of the screen by the American industry and its production community of Hollywood. This dominance was entirely commercial in character and a consequence of the World War. Internal issues in many, or most, countries became manifest as exhibitors and cinema interests struggled against nationalistic restrictions to maintain for their screens a flow of the American product to which their box office customers had been conditioned. Meanwhile, indigenous producers in every land demanded walls against Hollywood in terms of tariffs, quotas, and subsidies. The American industry, ever more international than national in operation and outlook, redoubled its efforts at acquiring and concentrating in Hollywood the most conspicuously important talent of every important national and racial area. In consequence, the early days of 1938 found several governments considering prohibitions against exodus of native stars.

Marked extensions of the use of the screen beyond the confines of amusement were to be observed, notably in advertising and related activities of general industry. Also gestures, promising potential progress, were made



Salisbury Photo Press]

AUDITORIUM OF THE GAUMONT STATE CINEMA, KILBURN, THE LARGEST IN EUROPE towards advancing the use of the screen in formal education. Largely extended use of the sub-standard films, 8mm. and 16mm., due in part to technical improvements in cameras, projectors, and sensitive materials, and to reduction in costs, became conspicuous in what is commonly designated as the ' non-theatrical ' field. The 16mm. film, which was originally designed for service of the amateur and home audiences, was becoming more the servant of industry, while the less expensive tiny 8mm., at first a toy novelty, acquired both capacity and status, with an apparent destiny of occupying the home market and the attention of an increasing number of amateurs. Another factor of influence was the increasing availability of libraries of projection prints, presenting subjects especially produced for the markets involved, and others at last made available from the accumulations of past releases of the dramatic producers. These developments were the more marked in the United States and in the British Empire. In continental Europe, the 9½mm. film, developed and widely introduced by Pathé Frères some years before the advent of sub-standard pictures elsewhere, continued to dominate the popular and non-theatrical markets, purveying kindred material.

The rising importance and application of the 16mm. film in the United States began towards the end of the year to invade lesser cinemas devoted to the showing of standard films, thereby suggesting developments of almost revolutionary significance in the field of established exhibition. This 16mm. entry was gained by reason of its ready utility in the production of local newsreels and topical records, used to supplement programmes of pretentious studio drama. It was found that for audiences up to perhaps 600 persons the image from a 16mm. print could be satisfactorily projected, and that productions of simple records of local events were readily within the capacity of ordinary amateur cinematography.

Potentially more important possibilities were introduced by this development, foremost among them the prospect that a new type of small cinema served exclusively by the inexpensive, non-inflammable 16mm. films, and requiring little in the way of projection room attention by skilled operators, might arise to compete with the lesser houses of the standard films in the hinterlands and marginal districts, a market including several thousand cinemas in the United States and Canada alone, and with further prospects in communities not now served by the cinemas. This was further indicated by the success of a number of small but successful ' road show ' projects involving the use of 16mm. films carried into remote regions with all equipment for exhibition in light inexpensive motor-cars. Continued improvements of sound apparatus gave 16mm. films a recording and reproduction quality comparing favourably with the standards of the pretentiously produced material of the big cinemas.

The external manifestations of the medium and disseminations of the technology of picture making and distribution, however, gained scant attention from the established art and industry. The movie industry was and is too completely concerned with its endeavours at maintenance of the status quo and the meeting of continuously obtruding problems of the trade, to give heed to manifestations any more remote than to-morrow's.

Less obvious, and in fact apparent to only a relatively few intimate observers, was the reluctance of a coterie of the builders of the modern industry to relate themselves to to-day's great corporations as the officers and servants of those corporations and their stockholders, rather than as in the manner of the earlier day, when they were masters and substantially sole owners. A consequence is much litigation, many claims, some receiverships, and smouldering recurrent conflicts with that sector which the picture industry parlance calls ' the bankers '. The conflicts in this category of relations also derive impetus from the fact that the motion picture, unlike most extensive industries, is an art and industry in which personalities are so preponderant that other factors are insignificant. The loss or acquisition of a handful of names, either in screen figures or executives, can affect many millions of pounds and determine the destiny of imposing enterprises. This explains in part many of the extraordinary salaries and bonuses paid to motion picture executives, several of them in the vicinity of £100,000 a year. The year 1937 saw none of those salaries diminished and some of them increased.

The most important aspect of the international situation was the negotiation for future motion picture trade relations between the United States and Great Britain, after the impending expiration in 1938 of the ten-year Cinema Films Act of Britain with its rising scale quota. Trade and parliamentary discussions were extensive. There was, however, a prospect that legislation might be supplanted by special terms of a general trade treaty between the nations. The terms of the final period of the Act required an exhibition quota of not less than 20 per cent. all-British product, a provision opposed by American interests and a majority of British exhibitors, and supported by British producers and affiliated interests. Meanwhile, in recognition of the motion picture's value in indirect promotion of American trade, the industry was enjoying a friendly attitude in the State Department.

As 1938 dawned, a decided majority of the American motion picture concerns were in apparently sound condition. Of the half-score of major corporate groups, three were conspicuously prosperous, several others in healthy condition, and a remaining three, representing probably nearly 30 per cent. of the invested capital of the industry, were in varying degrees of difficulty, chiefly internal and representing heritages of the market debacle of 1929 and the subsequent depression. Box office business at the cinemas, however, continued to promise support sufficient for conservative production operations.

Meanwhile, in the production community of Hollywood there was difficulty in many quarters in arriving at an understanding of what might be considered conservative endeavour, in the face of spectacular evolutions affecting the orders of picture making. Two elements conspired to make picture production tremendously more costly. First was the rise in commodity and labour prices, together with a complete unionization of all departments of picture making, which resulted in a direct increase of 30 per cent. in costs. Second, and even more expensive, was the establishment of a new level of super-production, a demand for a flow of pictures of a pretentious order without precedent. This advance became acutely obvious by early summer, when Adolph Zukor, in charge of production for Paramount Pictures Corporation, observed, ' The pictures that we must make to satisfy the public to-day represent as big a step upward and forward as the feature picture did in comparison with the short product of the old nickelodeon programmes '. Not long after, Mr. Zukor announced the budgeting of a production programme to include some 20 pictures at about £200,000 each. Meanwhile, the world market in the concluding months of the year saw the release

Imperator Film]

ANNA NEAGLE AND ANTON WALBROOK IN 'VICTORIA THE GREAT', DIRECTED BY HERBERT WILCOX

of several pictures costing over £400,000, most conspicuously the production of the Napoleonic drama, *Conquest,* variously reported as costing between £720,000 and £760,000. This cost, however, it was pointed out, was to be considered as extraordinary, in that some of the unusual and unanticipated delays and costs of production were in consequence of the death of the late Irving Thalberg, under whose administration the project was started. Incidentally the high cost of talent of top rank was exemplified in this picture with the reported payment of £73,000 to Charles Boyer for his rôle of Napoleon. This figure, however, was surpassed conspicuously by an earlier and even more pretentious Thalberg production, *The Good Earth,* in which Paul Muni is said to have received a total of £81,400 salary.

The remarkable rise in cost of the upper rank of pictures in 1937 was in part a consequence of developments of the depression years. In endeavours to lure the impoverished, bargain hunting public of the United States to the box office, theatres widely adopted the 'double bill policy', which meant offering two picture dramas on a programme for a single admission. As a result, the demand of showmen was for a premier feature to headline the show, and a less costly picture to complete the programme. In the beginning both pictures came from the same flow of production. The successful or 'hit' pictures became known as 'A' pictures and the less successful fillers of the programme were classified as 'B' product. 'A' pictures drew rental prices on their merits, while 'B' pictures, regardless of cost, were bought at 'filler' prices. Very shortly Hollywood began making 'A' and 'B' pictures by deliberate planning. The 'A' pictures received every attention at any cost, while 'B pictures were more and more cheaply made. Competition for the talent, in all departments, to make 'A' pictures became more and more hectic, while the incidental 'B' pictures fell into lower and lower estate. The early councils of 1938 in Hollywood were concerned with restricting budgets.

The American industry faced internal problems in relating itself to radio broadcasting, with advertising sponsors drawing heavily upon Hollywood talent. Two concerns, Metro-Goldwyn-Mayer and Warner Brothers, made studio contracts, tending to supplant individual star deals with the radio. Other problems were the movement of independent exhibitors to bring about State legislation with the object of divorcing exhibition from production and distribution; an attack on the distributor-owned circuits of cinemas, at which something more than 60 per cent. of box office admissions are collected in the United States. In one State, North Dakota, the 'divorce bill' was enacted into law, and was in the process of test in the courts.

Perhaps the most internationally important picture of the year was Herbert Wilcox's British-made *Victoria the Great,* starring Anna Neagle. By special sanctions of the Crown and government, access was had by the producer to sources, material, and scenes which gave the picture an extraordinary authenticity and documentary quality superimposed upon its drama.

Japan through 1937 consolidated plans for screen domination of the Orient. All films for Manchukuo were handled through a government trust, and early in the autumn an embargo until Jan. 1 on all importation of films, except newsreels under special permit, was put in effect for Japan. In December the embargo was extended to April 1938, and a commission was sent to the United States to set up arrangements for a special government-controlled organization to buy all pictures in the American market for Japanese exhibition.

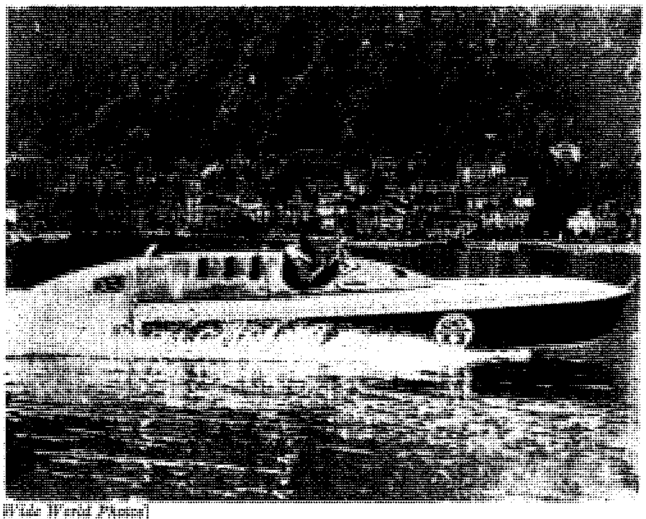
The Argentine was conspicuous among South American States in promoting an indigenous industry by national legislation. Native production vastly increased in India, with increasing difficulties for the American industry. In Mexico, the American industry faced rising native production and feared expropriation by the leftist government. (*See* also ADVERTISING, *Advertising Medium*; PHOTOGRAPHY, *Motion Pictures.*) (T. RA.)

MOTOR-BOAT RACING witnessed one of its most active seasons in many years in the United States, while in Europe several successful assaults on former speed records succeeded in lifting figures to well above their former levels.

The most noteworthy speed achievement was that made by Sir Malcolm Campbell in 'Bluebird', when, on Sept. 1, 1937, he set up a record of 129·5 statute m.p.h. on Lake Maggiore, bettering the former record of 124·96m.p.h. held by Gar Wood with 'Miss America X' since Oct. 20, 1932. 'Bluebird', designed by Fred Cooper, is 23ft. in designed length, and is fitted with a V-12 Rolls Royce aero motor of 36 litres piston displacement, delivering between 2,000 and 2,500 horse-power. The two runs on which the record is based were, outward 130·43, and return, against the wind, 128·57 statute m.p.h.

On the Seine, in Paris, a French team, headed by Jean Dupuy, won the Spreckels International Trophy for outboard driven boats for the third time in succession, covering in the two-hour limit, over a short course, 155·566km. (97·3m.), at an average of 48·6m.p.h.

In the United States, the race for the Gold Cup, oldest and most cherished speed-boat trophy, saw a field of ten starters at Detroit, including two Italian and one French entry. The winner was Herbert Mendelsohn's 'Notre Dame', driven by Clell Perry, which averaged 63·675 statute m.p.h. for the three heats, and made 68·645m.p.h



Wide World Photos]

SIR MALCOLM CAMPBELL IN HIS ‘ BLUEBIRD ’ AT LOCARNO

on her best 30-m. heat. The Italian ‘ Alagi ’, Count Theo. Rossi, was second, with an average of 62·359m.p.h. for the 90m. ‘ Notre Dame ’ also won the President's Cup on the Potomac, U.S., with ‘ Alagi ’ again second. At the same meet, on Sept. 27, ‘ Alagi ’ set up a world record for twelve-litre hydroplanes in the mile trials of 91·408 statute m.p.h. The result of the season's racing shows that the smaller, lighter boats are going faster than larger ones with more power. (H. L. St.)

MOTOR-BUSES. Recent developments have been directed towards refinements in design rather than towards radical changes.

The oil engine, by reason of its high thermal efficiency, is being adopted in Europe, where the fuel prices are favourable, and to a lesser degree in America, where petroleum costs are low. In Italy economic pressure has stimulated the development of buses consuming producer gas using charcoal as fuel. Producer-gas buses are being operated to a lesser extent in other European countries. Much attention has been paid to the reduction of noise and smoke of the oil engine by extensive research into fuel injection and combustion characteristics. There is a tendency to locate the power plant at the rear or underneath the floor in order to provide increased passenger accommodation.

Several transmission systems are being employed to facilitate gear changing. The epicyclic gear-box with the fluid flywheel is widely used in England, electrically operated epicyclic gear-boxes are popular in France, while in Germany multi-speed servo-operated gear-boxes are in favour. In America electric transmission is used on certain of the larger types ; in some cases power is supplied direct to the electric motor by overhead wires in urban areas. On arrival at suburban areas, the wires are discontinued, the engine is started, and the vehicle proceeds under its own power. In the automatic transmission group, the hydraulic torque converter has been fitted to some extent in England, whilst several other devices are still in the experimental stage.

The servo-assisted hydraulic brake is favoured in England, while in other European countries, and in America, air brakes are largely in use. The development of braking systems which are automatically self-adjusting is being pursued, and it is likely that this feature will be widely adopted.

High tyre mileages are now obtainable, and this has led to general reductions in pressure, with a view to enhancing riding comfort, a feature which has been the subject of much research. Variable rate and independent suspension for the passenger vehicle is still in the experimental stage, but considerable advance has been made in connexion with seat design. Absorbent rubber materials are superseding the spring type, while the shape of the cushions is carefully designed to give the passenger adequate support.

Air-conditioning plants are being fitted in certain instances in America, while in England heating and ventilation plants are being installed for long-distance travel.

In bodywork design, both interior and exterior, utility has been the major consideration ; elaborate decoration has been avoided, but simple colour schemes and the use of fabric-covered panels have provided an attractive appearance. Fully fronted vehicles are popular, while so-called streamlining has been influencing design. In Germany, where the new roads make higher speeds possible, the wind resistance has been effectively reduced by body treatment. In England, large single-deck buses are being constructed with three axles ; one recent design has two steerable front axles. This is resorted to on account of the legislation governing the maximum size and weight allowed on a two-axle vehicle. (A. A. M. D.)

L.P.T.B.]

THE LATEST TYPE OF LONDON TRANSPORT BUS (STL TYPE)

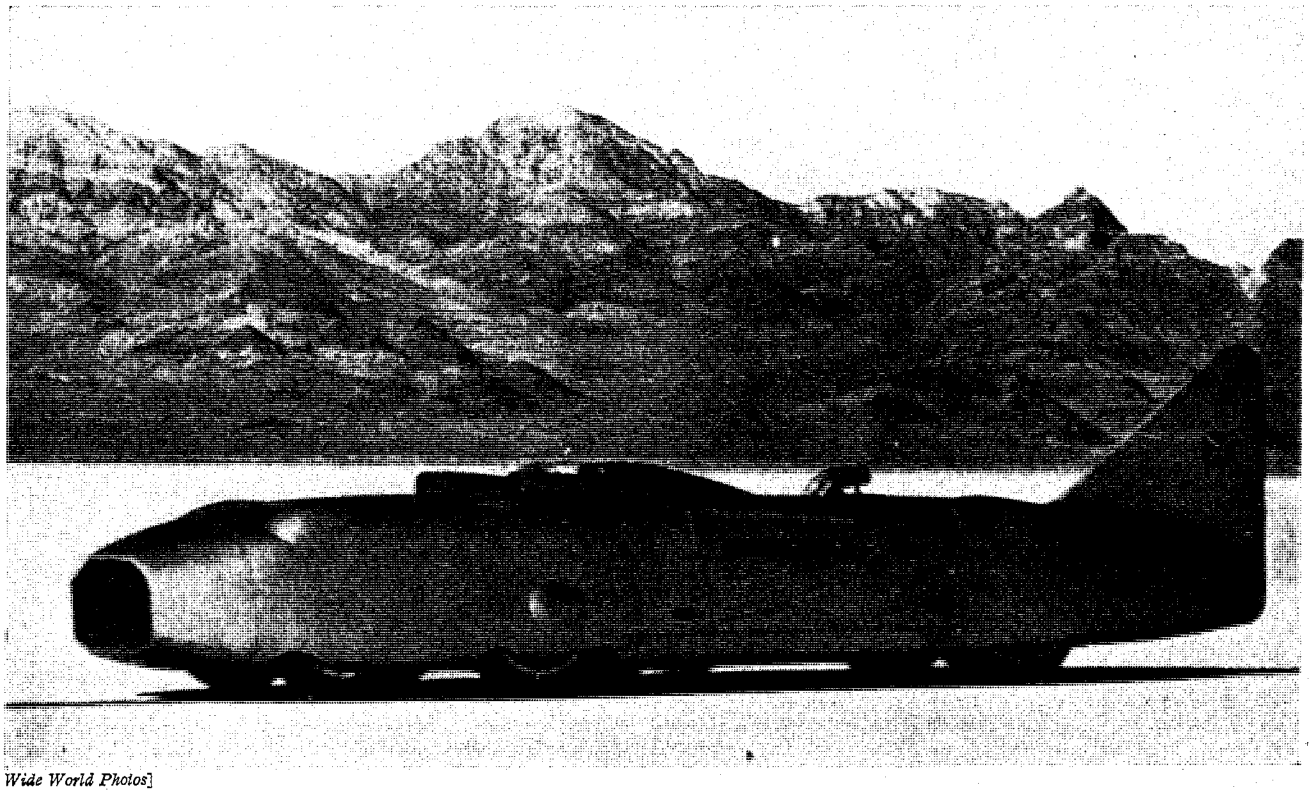
MOTOR-CAR. Apart from technical and mechanical improvements in the motor-car during 1937, there has been a continuation of certain trends in design, and the introduction of new ones. The significant trend still is, as it has been in the past, the rapid obsolescence of previous models. This is not the result of intentional styling by the designers, but rather is the result of continued progress by technicians in a number of industries. This can more easily be seen by what has happened in years past. For example, the streamline contours are the result of improvement in sheet metal and die design. The high compression ratios which result in larger power outputs in modern engines are largely the result of development of anti-knock motor fuels. High engine speeds are the result of development of light, high-strength alloys, satisfactory lubricating methods, and fatigue-resisting bearings. Each improvement in design has added to the value of the motor-car, and yet most of these improvements have been unaccompanied by rises in price. Processing and manufacturing methods have kept step with the improvements in design, and as a result an industry producing a product originally in the luxury class has expanded until it has become a ranking industry in the world representing also the largest purchaser of petrol, rubber, steel, malleable iron, mohair, lubricating oils, plate glass, nickel, and lead. World registration at the end of 1937 was estimated to be 42,400,000 units (*see* MOTOR TRANSPORT).

The appearance of the car and the comfort of the passengers both received consideration during 1937. The streamline appearance has been furthered by a smoothing of the lines of the car, and by incorporating external parts of the car into the body and fenders. Headlights are gradually being incorporated in the fender design, and in two new models have become completely recessed in the crown. Another has gone so far as to streamline the door hinges. Running boards are becoming less evident in all designs, disappearing altogether in some models. Taillamps have been included in the rear fender, filler caps have disappeared, and hood louvres have been done away with on a number of cars, in an effort to simplify the lines. The radiator as such has disappeared altogether, the only evidence being an ornamental grille with its accompanying figure on the front end of the hood. Two other models have done away with the grille, one replacing it with an integral part of the hood, and the other providing for air entrance through grilled scoops in the fender aprons.

In an effort to provide more room for front-seat passengers, several companies have introduced new types of transmissions, and remote controls for the orthodox type. The most radical departure is a semi-automatic transmission using one set of sliding gears, and two planet systems in series, resulting in four forward speeds. The sliding set is used for reverse and direct, while each of the two planet systems takes care of a forward speed, and the combination of the two in series gives still a third. The four forward speeds are divided into two ranges controlled by a shifting lever hinged on the steering post and projecting out into the space just under the rim of the steering wheel on the right side. The car is started in low range, requiring a depression of the clutch pedal. The shift into second gear is made automatically at 6m.p.h. At any speed above 6m.p.h., the car can be shifted into third gear by the movement of the control lever without depressing the clutch pedal, and at 23m.p.h. the shift is automatically made into high or direct gear. Another company, having had success with pre-selector transmission, has added an automatic clutch during the year. Others have made use of vacuum operation and mechanical linkages for remote control of their gear-boxes. One English model uses a pre-selector transmission, whereby the moving parts are integral with the engine, and thus serve as part of the weight of a flywheel.

There has been a continuance of the swing towards automatic control of the ignition and carburetion, with the addition of several new models to this group. Clutch-pedal pressure has been relieved somewhat by the use of over centre springs incorporated in the regular clutch-pedal linkage. A new type of clutch spring appeared in the form of a diaphragm spring having 18 integral tapering fingers pointing towards the centre. The rim of the spring acts on the pressure plate of the clutch, giving a uniform pressure and a decreasing spring rate as the clutch pedal is depressed.

There has been a definite tendency in British cars towards changing the weight distribution to afford better springing. Much has been accomplished by moving the engine forward in the frame, which at the same time allows more space for the passengers in the body. Problems of control have been given considerable attention on both sides of the Atlantic. The American builders prefer a soft springing arrangement to improve the ride of the rear-seat passengers, but this soft springing brings up some problems in braking and steering. Fast stops from high speeds are accompanied by a tendency for the axle to rotate on the spring in the ortho-



Wide World Photos]

CAPTAIN G. E. T. EYSTON DRIVES HIS 'THUNDERBOLT' AT 309·6M.P.H. AT BONNEVILLE SALT FLATS, UTAH dox type of front axle. In some cases this is met by the use of radius bars or restraining cables, while in others it is eliminated by the use of independent front-wheel suspension. As a rule, British cars prefer using a harder spring to obtain anti-roll characteristics.

High top speeds have been continued in all motor-cars during the year, but these are a by-product of the demand for increased acceleration and hill-climbing power. Several British cars, other than the out-and-out sports cars, are capable of road speeds between 80 and 90m.p.h., while the class of car capable of maintaining high speeds mainly through ability to accelerate quickly is dominated more by the American makes.

Interiors of a number of American makes of cars have been designed to minimize injuries suffered in quick stops and mild collisions. Control knobs have been recessed for the protection of the front-seat passengers, while the top of the front seat has been padded and a cord robe rail used in consideration for the rear-seat passengers. British cars show a trend towards individual mounting of the instruments in dial form to make them more legible. (C. F. KE.)

MOTOR RACING. Captain George E. T. Eyston, of England, broke the world land-speed mark over a measured mile on the Bonneville Salt Flats, in Utah, U.S.A., driving his racing car 'Thunderbolt' over the distance at an average speed of 311·42m.p.h. This easily shattered the previous record of 301·1292m.p.h. set up on the same flats in Sept. 1935 by Eyston's compatriot, Sir Malcolm Campbell. Captain Eyston, prior to setting up the new world speed mark, also broke three other standards—the 3,000 kilometres, 12hrs., and the 2,000 miles. His average speed for the 2,000 miles was 163·75m.p.h., for the 12-hr. run 163·68m.p.h., and for the 3,000 kilometres, 163·49m.p.h.

The *Grand Prix d'Endurance* (about 24hrs.) was won at Le Mans by R. Benoist and J. P. Wimille, who covered 2,036·34 miles at 85m.p.h. The Italian Grand Prix was won at Leghorn by R. Caracciola in a Mercédès-Benz at 131·3k.p.h.; and the International Grand Prix at Donington Park by B. Rosemeyer, in an Auto-Union, at 82·86m.p.h. G. Comdotti, in a Darracq, won both the International Tourist Trophy and the Tourist Trophy at Donington Park. The International Trophy was won at Brooklands by Prince Birabongse in an E.R.A.; and R. Mays, also in an E.R.A., won the British Empire Trophy at Donington Park.

Wilbur Shaw, of Indianapolis, Indiana, U.S.A., won the annual 500-mile Indianapolis auto-racing classic by the margin of 2·16secs., in the record time of 4hrs. 24mins. 7·81secs., and at an average speed of 113·58m.p.h. At the newly constructed Roosevelt Raceway in Westbury, Long Island, the second running of the revived Vanderbilt Cup race saw Bernd Rosemeyer, Germany, drive his rear-motor Auto-Union to victory by the slim margin of 51·03secs. over his nearest pursuer, Richard Seaman, of England. Rosemeyer covered the 90 laps in 3hrs. 38·75mins., at an average speed of 82·564m.p.h.

MOTOR TRANSPORT. At the close of 1936 there were approximately 40,287,000 motor vehicles on the roads of the world, an increase of some 8 per cent. over the previous year. That there has been a further growth during 1937 is certain from figures published at intervals during the year, but as the year progressed there were signs that the rate of increase was slowing down. The United States of America still leads with 70 per cent. of all these vehicles. The following table shows the motor vehicles registered in the principal countries in 1936:—

	Passenger vehicles.*	Goods vehicles.	Total.
United States . .	24,219,000	4,002,000	28,221,000
Gt. Britain . .	1,755,000	514,000	2,269,000
France . . .	1,687,000	480,000	2,167,000
Germany . .	1,061,000	309,000	1,370,000
Canada . . .	1,041,000	193,000	1,234,000
Australia . .	511,000	179,000	690,000
Italy . . .	300,000	115,000	415,000
Soviet Russia . .	56,000	300,000	356,000
Union of South Africa	246,000	34,000	280,000

* Motor-bicycles are excluded.

(This table includes all countries with 250,000 motor vehicles or more.)

In relation to population the United States still heads the list with 4·5 persons to a vehicle, followed by New Zealand with 7 persons, and Canada with 9. European countries are headed by France with 19; Gt. Britain, 21; Denmark, 27; Belgium, 41; Germany, 49; Italy, 103. If motor-bicycles were included, Great Britain would show the greatest development.

Per mile of highway, Great Britain with 11·2 vehicles has the highest density. It is followed by Belgium with 10·2; Switzerland with 8·9; United States with 8·6; Holland, 8·5; Germany and France each with 5·2; whilst Canada has 2·8 vehicles.

In all countries the road motor vehicle is extending its activities, and everywhere it is causing embarrassment to railways. Where railways are State-owned, this may mean financial embarrassment to the State. The consequent destruction of railway capital earning power has been a potent cause of regulation of motor vehicles. The congestion on the roads, leading to extended demands for the expenditure of vast sums on new roads and the improvements of existing roads, has also caused action to be taken to limit the numbers of vehicles. Further, the competition between haulers by road has often been destructive of efforts to maintain regular services at reasonable charges, and caused such a crop of bankruptcies amongst the operators as to bring a demand from them for regulation.

The regulation has taken many forms. In Northern Ireland, for example, it resulted in the establishment of a board to take over all the road services. A similar board was established for the railway, and the two were to endeavour to work for the economic co-ordination of road and rail. So far the Road Transport Board has made a substantial loss (£200,000). As a result an inquiry is to be held on the operation of the Road and Railway Transport Act. In South Africa a large part of the road transport is conducted by the railways, other parties being limited or excluded, and similar action is being taken in New Zealand. In Germany, the rates charged for distances of over 50kms. by road must equal certain railway rates. To make the law effective haulers are strictly divided into those who limit the work to a maximum of 50kms., and those who engage only in long distance haulage. The latter must all belong to a State association, and all transactions must be settled through it. This division is obviously uneconomic. In Great Britain the licensing system has been used to check new entry and hinder expansion of road carriers for hire, and by degrees order is replacing a chaotic condition. In the United States the problem is rendered very difficult by the division between Federal and States authority, and the wide differences between the action taken by the individual States. The result is that the desired co-ordination between rail and road transport has made little headway.

Other countries are trying other ways of solving the problem, but no country has so far succeeded or seems likely to do so. This is because in none are the hours and wages of men employed in road transport made similar to those usual on the railways, and in no country has road transport been placed under the same regulations as regards rates, and the same obligations as regards carrying. In the United States an Act prohibits undue preferences, but such legislation cannot be made effective so long as the carriers by road are so numerous and so little organized. A further difficulty in the way of arriving at an economic division of function is that whilst railway traffic is required to pay rates which will provide for interest on the capital expended on the track, in few countries does the taxation on motor vehicles and their fuel provide for any surplus on their share of the current expenditure on roads. The taxation is increasing, and in the U.S.A. preliminary figures indicate it reached the sum of $1,580,000,000 (£316,000,000) in 1937, whilst in Great Britain it totalled about £73,000,000, compared with a current road expenditure of about £60,000,000. Such figures indicate that in this respect the difference between road and rail is being substantially modified.

A matter of grave concern in connexion with motor transport is the number of persons killed and injured by motor vehicles on the roads. Much is being done in the way of testing drivers before issuing licences; installing traffic lights, notices, and other systems of control including highway safety courses in the curricula of primary and secondary schools; improving road surfaces so as to reduce the liability to skid; constructing by-pass roads to reduce the traffic passing through narrow streets in towns; improving the brakes on vehicles and their inspection. In spite of this, few countries can show any material reduction in the toll of accidents. The most that can be said is that the accidents are not rising with the growth in the number of vehicles in use. The following figures show the number of automobile deaths per 10,000 motor vehicles in 1936 in the countries named:—

Canada	10·5	Great Britain	25·4
Union of S. Africa	11·2	Germany	42·4
Norway	12·8	Belgium	43·6
United States	13·0	Switzerland	49·1
Australia	16·8	Holland	51·1
Sweden	23·1	Italy	61·4

In the United States of America the deaths have risen every year during the past 15 years except in 1932, and in 1937 were 39,700, which is more than double the number in 1923—18,400. In Gt. Britain the deaths in 1937 numbered 6,591, which was 30 more than in 1936, whilst the number of injured was 226,339—a decrease of 1,474. In South Africa in 1936 the persons killed numbered 1,015, and the injured 14,406.

In Gt. Britain an analysis has been made of 100,000 road accidents involving personal injury which occurred between April and September 1936. The major causes are shown in the next column.

Analyses such as this should be an important aid to improvement, but meantime the annual casualty list for the world equals that of a great war.

Great Britain.—The growth in motor transport has continued in 1937, though there were signs of a slackening towards the close of the year. At Sept. 30, 1937, the number of vehicles, including motor-bicycles, licensed was 2,860,028; of which 1,178,105 were taxed on horse-power, 487,576 were motor-bicycles, and 478,922 goods vehicles. The most notable increase among cars was in the 10-h.p. class, which numbered 380,975, an increase of 25 per cent. The 8-h.p. class remained the most numerous with 480,137, an increase of 15 per cent. The motor-bicycles continued the decline, which has been a feature of recent years.

	No. of accidents.	Total.
Drivers or riders of vehicles—		
Emerging or turning into road	9,655	45,045
Lack of attention	6,786	
Misjudging clearance	4,993	
Skidding	4,830	
Excessive speed	4,430	
Swerving	4,209	
Overtaking improperly	3,729	
Failing to keep in proper line of traffic	3,234	
Losing control	3,179	
Pedestrians:		
Heedless of traffic	11,261	22,911
Coming out from in front or behind vehicle which masked movement	3,638	
Children under 7, unaccompanied or inadequately supervised	7,967	
Causes ascribed other than to persons (*e.g.*, road or weather conditions, defects in vehicles, etc.)	8,662	8,662

In the case of public passenger vehicles the sixth annual report of the Traffic Commissioners stated that, in the year ending March 31, 1937, the number of operators has declined by 360 to 4,991, whilst the vehicles owned had increased by 1,463 to 47,973 with an average of 34·85 seats per vehicle, an increase of 1·25 seats. The passenger journeys numbered 6,426·4 millions compared with 6,031·3 millions in the previous year. The receipts rose from £62·5 to £65·6 millions, though the average fare continued to fall—2·44d. following 2·47d., and compared with 2·66d. in 1931. The average receipt of 11d. per vehicle mile was the best for a number of years.

The toll of accidents, deaths, and injuries on the roads continues unabated. The total casualties for the year 1937 were 6,591 persons killed and 226,339 persons injured, compared with 6,561 killed and 227,813 injured in 1936. All that can be claimed for the many steps taken to improve safety is that the casualties have not increased in spite of the growth in the number of vehicles on the roads. An analysis of 100,000 accidents which occurred in the six months ending Sept. 30, 1936, revealed the tragic fact that 7,967 children under 7 either unaccompanied or inadequately supervised were amongst the victims. The great preponderance of accidents, however, was due to the drivers or riders of vehicles, indicating a lack of care or attention or an undue taking of risks.

The problems of hours, wages, and conditions of service in connexion with Goods Road Motor Transport engaged the attention of the 'Baillie' Committee (Report *cmd.* 5440, 1937). The recommendations of that committee aim at putting a stop to the scandals of excessive hours of work and under-paid labour, and to bring the standard more into line with the railway standard. The principal difficulty lies with the employees of the 'C' licence holder, and the recommendations will bring them under some control if, and when, given effect. This standardization of wages and conditions of service is recognized as an essential preliminary to arriving at an economic division of function between road and railway transport.

An important report on Services and Rates was made by the Transport Advisory Council. In it, it is recommended that statutory area rates committees with area rates officers should be set up to organize a road rates structure for each area, with a road rates tribunal to co-ordinate when more than one area is concerned. The period for setting up the rates structure should be limited, and in default the road rates tribunal should carry out the task. The rates should be published, and undue preferences should not be allowed. If these recommendations and those of the 'Baillie' Committee are given effect, the railway road problem will be on the way to solution as the relative economy of the two means of transport will be more readily discernible. (W. T. St.)

United States.—Motor transport is the fastest growing form of public transportation in the United States. The volume of business carried is extremely large and constantly growing larger. The enactment of State laws and of the Federal Motor Carrier Act of 1935 has already done much towards putting this form of transport on a firm foundation. The Federal law is being interpreted slowly and gradually along sound economic lines. Since 1935, the Motor Carrier Bureau of the Interstate Commerce Commission has prescribed rules and regulations governing insurance requirements, and for safety of operations has required reports of accidents serious enough to involve major injuries and fatalities; has issued identification plates for all carriers coming under the Act; has promulgated an accounting classification; has issued a fair-sized number of certificates of convenience and necessity; has prescribed hours of service for drivers; has required the filing of tariffs and forced compliance with the filed rates. But much remains yet to be done, for new applications for extensions and mergers are being filed at a faster rate than they can be passed upon.

The number of lorry or truck operations exceeds that of the bus because trucks are used, not only by cartage companies in cities, but by 'over the road' haulers and by private businesses as a part of their service to consumers. Yet the motor-bus has made rapid strides in both city and long-haul service. At the end of 1937, bus operations were found in 801 of the 982 cities that had a population of 10,000 or more. Further analysis showed that in 496 of these cities motor-buses have entirely supplanted all other means of fixed-route public transportation. This group of companies owned 24,500 motor-buses, and in 1937 the number of passengers carried was estimated at 2,810 millions. Inter-city carriers linked together practically every important city and town in the United States. Such carriers owned 24,750 vehicles, ranging from 7-passenger sedans to 32-passenger streamlined cruisers operated by large companies on through routes connecting the larger and more important cities. For 1937, it was estimated 627 million passengers were carried by this group. By far the majority of bus-operating companies were owned by individuals or corporations not connected with other forms of transportation. In cities, however, electric railways that were still functioning owned 13,500 buses, which are operated as a part of their service, either directly or through subsidiaries. In the inter-city field, some 60 steam railroads also had considerable interest in highway transport.

In 1937, the motor-buses operating over regular or fixed routes in the United States, with little more than 5 per cent. of the combined total plant and equipment investment in passenger transport facilities, carried 28·6 per cent. of the total number of passengers handled by all facilities, and obtained a little more than 27 per cent. of the operating revenues and yielded a fairly reasonable return on its investment.

Highway transport by 'over the road' haulers was a development dating back to the railroad embargo period during the World War. Born of necessity to get shipments through to destination more quickly, the 'ship by truck' movement became general in every part of the country. Regular routes have now been established, operating on schedule and charging published tariff rates. Many classes of commodities are handled. More than half the nation's livestock is transported to market by motor truck, along with three-fourths of the perishable fruit and practically all the milk supply of metropolitan communities. The United States Department of Commerce showed in 1935 three-fourths of the 188,809 trucks owned by 61,216 for-hire truckers operated locally. It is said that farmers have one million trucks. A count of trucks in the 93 cities with over 100,000 population as on July 1, 1936, showed 938,500. From these figures, there are at most 2 million for-hire trucks, of which 75 per cent. are found in local cartage.

(C. W. S.)

MOTOR VEHICLES, COMMERCIAL. In recent years there has been a general tendency to improve the outward appearance of commercial motor vehicles, as well as those features of their design which make for the driver's comfort. Cabs are now often of all-steel construction, with well-rounded contours, provision for good vision, and adequate means of ventilation. Appearance has been improved also by the use of deeply crowned fenders and ornamental radiator grilles. The general design of lorries has been influenced to a considerable extent by local regulations and local conditions with respect to fuel supply.

A recent trend in design in Great Britain has been to increase the pay-load capacity of lorries of 2½ long tons unladen weight far beyond what has been customary in the past. Up to some years ago such lorries had a pay-load capacity of something less than 2 long tons, but in 1937 a number of British manufacturers have succeeded in producing lorries coming within this unladen-weight limit which have a pay-load capacity of 5½ tons. The reason is that under a new law adopted some years ago, the speed limit for commercial vehicles of less than 2½ tons unladen weight is 30 m.p.h., whereas that for heavier vehicles is 20 m.p.h. The total number of commercial vehicles of more than 5½ tons pay load produced annually is quite small.

A new type of lorry produced in England during the past year has four front steering-wheels and two rear driving-wheels. The advantage claimed is that there is less side-skidding of tyres in turning corners than with the conventional six-wheeler having two steering and four driving wheels, as the steering wheels can be so linked together that the areas of all wheels produced meet (nearly) in a common point, which is the condition of skidless turning.

In the United States there has been a strong tendency towards the cab-over-engine type of lorry, or truck, in which the driver is seated over the engine instead of behind it. This design shortens the truck for a given length of loading space, which is of value, in that it conserves space in garaging, parking, etc., and makes the vehicle more manœuvrable. It also gives a better distribution of load between the front and rear axles. Heavy four-wheeled trucks usually are equipped with single front and dual rear tyres of the same size, and to load all tyres equally there must be half as much load on the front as on the rear axle. With the cab-over-engine design, this load distribution is easily achieved, whereas with the conventional lay-out, the load on the front axle is usually much less than that required by this rule.

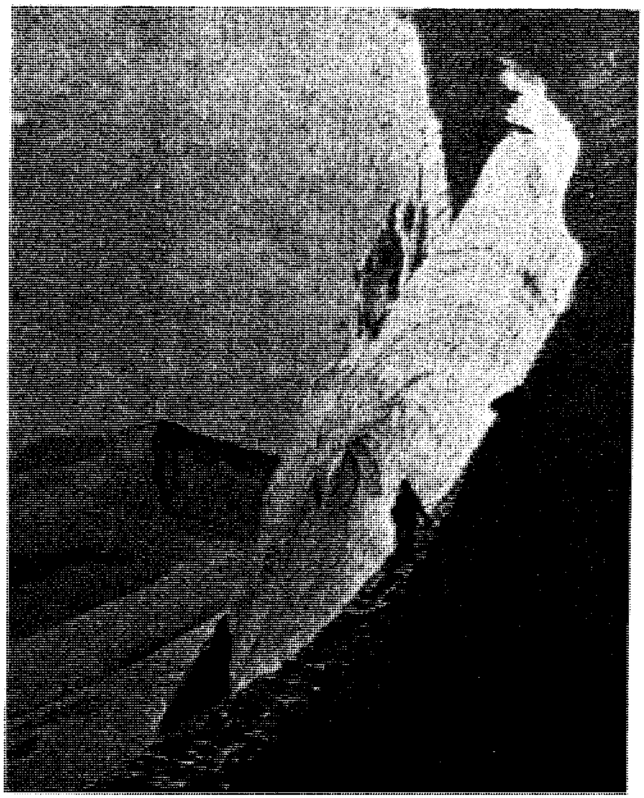
Of recent years there has been a tendency for commercial vehicles of heavy-load capacity produced in European countries to be equipped with diesel (heavy-oil) engines, which burn a fuel that is cheaper than petrol and of rather less volume per horse-power-hour produced. In continental countries, however, and particularly in Germany and Italy, there has been a drive to substitute motor fuels of domestic origin, such as coal gas and other products, for the imported petroleum fuels that so far have been used. Manufacturers now equip heavy commercial vehicles with engines that are readily convertible from diesel or compression-ignition to gas or spark-ignition engines.

During the 12 months which ended Sept. 30, 1937, 928,072 motor trucks were produced in the United States and Canada. It is customary to combine the productions of these two countries, because all or practically all Canadian plants are branch plants of firms domiciled in the United States. In the United Kingdom production of motor lorries increased from 92,176 in 1935 to 107,609 in 1936.

(P. M. H.)

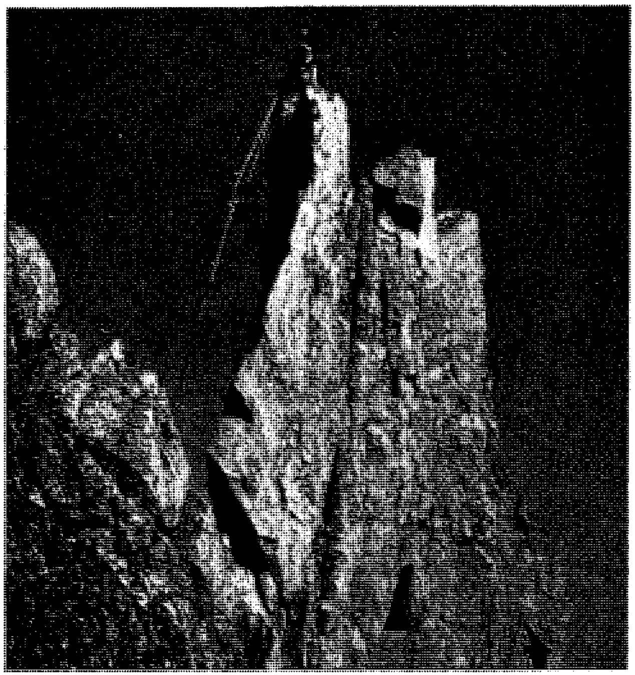
MOUNTAIN CLIMBING. In the Alps the summer of 1937 was favourable until the middle of August, but since the last unclimbed routes of the Matterhorn were overrun by the end of the season in 1932, and the formidable northern cliffs of the Grandes Jorasses were stormed in 1935, the field for new ascents in Europe is exhausted, and explorers turn their attention to more distant ranges.

Fortunately, Alpine accidents were less noteworthy than in 1936. There was one exception, however, in the case of the astonishing drama staged by two young men in Bavaria, who embarked on a particularly difficult way up the Watzmann in bad weather in mid-winter. They also created a new precedent in the annals of mountaineering by refraining at first from co-operating with the rescuers and refusing to answer shouts. Eventually the heroic exertions of an enormous search-party, comprising the élite of Bavarian climbers carrying thousands of feet of rope, preceded by aeroplanes and supported by regular troops, made it possible to rescue the two men from the consequences of their folly, and lodge them safely in hospital—but only after a desperate struggle lasting a whole week and gravely endangering numerous lives. The Central Committee of the Swiss Alpine Club have published a manifesto deprecating the granting of testimonials and rewards for mountaineering performances of this sort.



E. Meerkämper]

MOUNTAINEERING. CLIMBING THE BIANCOGRAT OF THE FAMOUS BERNINA GROUP IN SWITZERLAND



E. Meerkämper]

DESCENT BY DOUBLE ROPE IN THE ALPS

In Alaska a fine achievement by American mountaineers was the first ascent, by Washburn and Bates, of Mount Lucania, 17,150ft. above sea-level, the highest virgin peak in North America.

In the Caucasus a British expedition ascended the South Peak of the Matterhorn-like Ushba, and effected a new route up the great ice-face of the beautiful snow-mountain, Tetnuld, another big Caucasian peak.

Among various Himalayan ascents which reached heights of 24,000ft., was a spirited attempt on Kamet, the peak of 25,450ft., first climbed by the Smythe expedition in 1931. In June three corporals and a private serving in the 1st Battalion of the East Surrey Regiment in India established a camp at 21,000ft., and got to 23,500ft. without the help of any porters. Another fine feat was Chapman's ascent of the great peak of Chomolhari, situated on the borders of Tibet and Bhutan, almost 24,000ft. above the sea. Smythe and Oliver in Garhwal also ascended the fine upstanding satellite of Kamet known as Mana Peak, 23,862ft.: this was described by Smythe as the hardest climb he has ever done.

In the north-west Himalaya one of the strongest parties ever organized, consisting of German climbers under the leadership of Dr. Wien, and accompanied by first-rate Himalayan porters, met with a terrible disaster on the gigantic virgin peak of Nanga Parbat, already notorious for the destruction of ten men under Herr Merkl in the stormy weather of 1934. In 1937, through no fault of its own, practically the whole expedition was wiped out in the night in a minor ice-avalanche which overwhelmed the camp at a height of 20,000ft.

BIBLIOGRAPHY.—*Alpine Journal*, No. 225 (Season of 1937); *Quarterly Review*, April 1935 (Nanga Parbat); *Mitteilungen* of the Deutsche u. Österreichische Alpen-Vereins, 1937 (Accident on Watzmann). (C. F. ME.)

MOZAMBIQUE, a Portuguese colony on the east coast of Africa, bounded N. by Tanganyika and S. by Natal, with lake Nyasa and Nyasaland, North and South Rhodesia, the Transvaal and Swaziland on the west; area 297,700sq.m.; population 4,028,750, of whom all but 36,000 are natives. Lorenço-Marques is the capital and one of the chief ports (serving the Eastern Transvaal); others are Mozambique, Beira, Porto Amélia, and Quelimane. The colony supplies large contingents of native labourers to the mines of the Transvaal and Southern Rhodesia, as well as to its own mines, including gold—of which £1,940 was exported in 1934. The chief products are sugar, maize, coconuts and copra, sisal, citrons, and beeswax. In 1935, imports totalled about £2,244,630, and exports £1,758,920; and in 1935–36 the budget balanced at about £2,980,000. A small defence force of 100 Portuguese officers and 2,400 men, with 2,000 native troops, is maintained.

Four hundred and sixty miles of railway are under State administration, and lines from Lorenço Marques and Beira connect with the general South African railway system, communication also being available to Lobito Bay, Angola, on the west coast. In 1937, an expenditure of £3 million on new railways, roads, posts, and other public works was sanctioned. There are over 3,150m. of motor-roads in the colony, 7,200m. of telegraph line, and about 4,000m. of telephone. Early in 1938, a passenger air-service was inaugurated connecting Lorenço Marques with the Imperial Airways bi-weekly services with Johannesburg, the largest hangar in Africa having been erected at Lorenço Marques. In 1937, the construction of five directional radio stations was approved, and in the same year a joint Portuguese-British survey of the Mozambique-Rhodesia border was completed after four years' work.

MUFTI, THE GRAND, OF JERUSALEM, Haj Amin Effendi El Husseini (*c.* 1878–), half-brother of his predecessor, was educated for the post at the Azhar university, Cairo; during the World War served with Feisal at Damascus and with the Military Governor of Jerusalem, assisting in recruiting; but after the Balfour Declaration became anti-British, and in 1920 fled to Transjordan to avoid serving a sentence of 10 years' imprisonment. Returning under amnesty, he was (1921) appointed by the British authorities to the Grand Muftiship, in 1922 being elected president of the Supreme Moslem Council, in which capacity he had control both of the religious courts and of some £120,000 per annum. Responsible to some extent for recurring anti-Zionist disturbances, in 1936 he was elected president of the newly formed Arab High Committee (*see* PALESTINE), and endorsed the strike against and boycott of the Royal Commission in the autumn, though in Jan. 1937 he appeared before that body, testifying to the complete hostility of himself and his followers to any Jewish home in Palestine. In July 1937, when it was clear that his influence was employed against the administration and the headquarters of the Higher Arab Committee was raided by the police, he escaped, and on Oct. 1 was deprived of his offices—the H.A.C. and all National Committees being simultaneously declared unlawful. On Oct. 16 he escaped from his hiding-place in Jerusalem, and was eventually granted asylum in the Lebanese Republic by the French administration, which acted on information received from the British Foreign Office.

MULTIPLE AND CHAIN STORES. Although precise statistics are not available, there can be no doubt that during 1937 chain and multiple shops obtained an increased proportion of total retail trade in Great Britain. Their expansion was largely assisted by the considerable movement of population from declining to expanding industrial districts, and from the centre to the circumference of large towns. The development of shopping centres on new housing estates is subject to control by local authorities under the Town Planning Acts, a situation which favours multiple shop companies, whose organization permits the rapid establishment of efficient new branches, capable of quickly achieving a substantial turnover, and hence of paying the high rents demanded for the restricted number of sites.

The above circumstances are mainly responsible for the continued steady development of established chain and multiple shop companies and of co-operative societies. New company development in this field is in Great Britain chiefly confined to 'variety chain' shops selling a wide range of articles covering many sections of retail trade, whose scope is regulated more by maximum price limits than by types of merchandise. In this sphere during 1937 there were many new experiments, though subject to a high degree of mortality. Outstanding among them was the entry into the chain-store field of 'Football Pool' organizations. Several of the latter, no doubt fearful of possible future legislative restrictions on their primary activities, and profiting by the possession of large mailing lists of their clients, recently established substantial mail order businesses based on the 'Club Trading' device already successfully exploited by other companies. These they supplemented during 1937 by the establishment of variety chain stores with maximum price limits, selling to the public for cash. Like the established variety chain store companies, these new groups do not advertise, but rely upon the existing goodwill of their names, upon central sites, and upon outstanding value of merchandise, made possible by rigid selection of lines handled and by restricting selling services to the minimum.

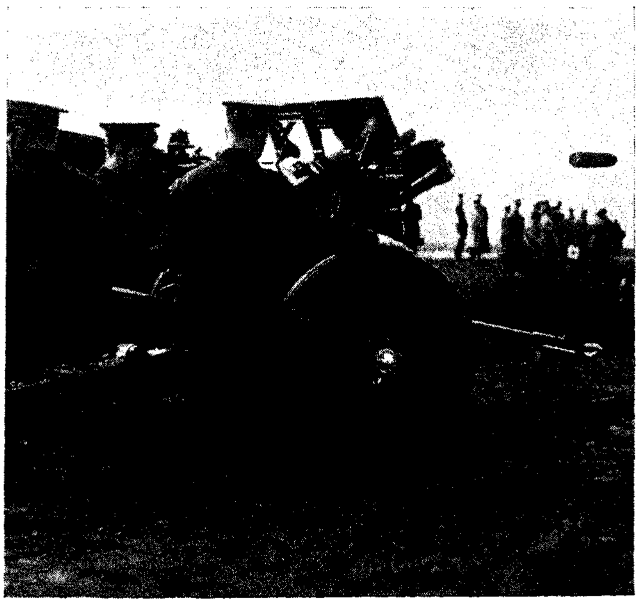
The first serious attempt in Great Britain to regulate by legislation the development of multiple and co-operative stores occurred in Jan. 1937, when the Shops (Retail Trading Safeguards) Bill was introduced into the House of Commons by a private member. This bill proposed that no organization might establish more than six branch shops, or increase the staff at an existing branch shop by more than 10 per cent., unless it had obtained a licence, to be granted by commissioners only if they decided that existing shopping facilities in the district in question were inadequate. The government and the bulk of the House of Commons, however, gave no support to the bill, and its second reading discussion was 'talked out'.

By contrast with British experience, corporate chain stores in the United States of America (which do from 20 to 25 per cent. of total retail trade, as compared with 30 to 40 per cent. handled by multiple and co-operative shops in Great Britain) are facing increasing legislative restriction. During 1937, new State laws and Court decisions on existing laws brought up to 22 the number of States imposing tax levies on corporate chains, graduated according to the number of their branches. Further, there are now two important Federal legislative measures which operate to curtail the buying advantages of corporate chains. The Miller-Tydings enabling amendment to the Sherman Anti-Trust Act has increased the pressure on manufacturers of branded merchandise to use the several State permissive fair trading Acts to establish uniform minimum re-sale prices. Stronger enforcement of the prohibitions on the diversion of 'brokerage' and on 'unfair' discounts and allowances, stipulated by the Robinson-Patman Act, have operated to diffuse large-scale buying advantages more evenly as between corporate chains and independent retailers.

Account must also be taken of the increasing development in the United States of America of 'voluntary chains', particularly in the food trade, whereby independent retailers combine together to secure large-scale buying advantages; and of the growth of 'super-markets' of which fully 1,000 were newly established in 1937. These developments are forcing corporate chain stores to experiment with revised methods of operation, the trend of which at the moment cannot be forecast. (D. BA.)

MUNITIONS OF WAR. For the most part, the year 1937 witnessed no revolutionary changes in the composition, evolution, or tactical employment of munitions of war. But if it did not bring forth much that was epoch-making, it compensated in volume and variety for any paucity of invention. All major nations devoted increasingly large proportions of their budgets to the development of existing and experimental types of armament, and all save the United States to the accumulation of huge war reserves of these. Notable was Great Britain, now in the midst of her £1,500 millions rearmament programme, the cost of which, according to reliable predictions, is likely to come closer to £2,000 millions before it meets completion. (*See* REARMAMENT, BRITISH.)

Acute international situations emphasized the broad connotation of the word 'munitions', which, ever recognized by the military, is at last being better appreciated by the lay civilian. For the term applies by no means exclusively to implements of combat, but rather embraces many of the raw materials entering into their fabrication, or contributing directly or indirectly to their manufacture and employment. Thus the 234,000 gross tons of steel and 427,886 tons of scrap iron exported from the United States in April 1937 (the most for any one month since 1921) largely constituted, in effect, war munitions, although not so classified under her neutrality act of 1935, and caused numerous agencies committed to programmes for universal peace almost as much concern as if they had been finished guns and projectiles.



Fox Photos]

ROYAL HORSE ARTILLERY DEMONSTRATING A 3·7 HOWITZER TO THE STAFF COLLEGE, CAMBERLEY

Yet whatever their social and economic significance, it is patent that munitions, even in times of peace, are playing an increasingly important part in our daily life. Witness the fact that Poland launched in 1937 an expensive ten-year programme for moving her entire armament industry, now located in Upper Silesia, into a triangle of land at the mouth of the San, where it is best protected in event of hostilities.

With any discussion of munitions is inseparably connected some reference to their tactical employment. Hence frequent mention will be made of observations based upon the current war in Spain, and the resultant effects which these are exerting on armament trends the world over. Such trends have, for the most part, run closely parallel; for secrecy in design and development is well-nigh impossible, one nation's accomplishment of to-day becoming common property to-morrow. Hence no studied effort will be made to outline the achievements of individual commonwealths, but rather to indicate world-wide tendencies in the following basic instruments of modern warfare.

Aircraft.—Huge expansion programmes are everywhere in evidence. Thus a credible estimate reckons the number of military aircraft in Europe in Jan. 1937 at 25,000 to 30,000, with a prediction that this figure might readily be doubled by the beginning of 1938. Great Britain alone budgeted during 1937 a gross of £48,132,000 for her air forces, as against £30,340,000 in 1936.

The military characteristics of aircraft of all types underwent material improvement. The latest bombers operate at top speeds of 250–280m.p.h., weigh up to 30 tons, have wing spreads of 150ft., and carry more and larger guns, capable of resisting attack from any angle. Recent observations in Spain indicate that their increased speed perhaps offers greater defence against attack by pursuit planes than does the heavy armament. But all-metal planes have proved more vulnerable to machine-gun and cannon fire than those of composite construction, requiring more extensive repair after damage. And retractable landing gears, injured by gunfire, have caused the loss, on landing, of many planes which might otherwise have been safely grounded.

Fighting planes now attain speeds of 300m.p.h., with ceilings of 30,000ft. Conventional armament includes two automatic cannon forward, and two machine guns aft. An automatic landing device perfected during 1937 by the United States Army Air Corps, and assuring safe landings without human hands touching the controls, constitutes one of the outstanding achievements of the year.

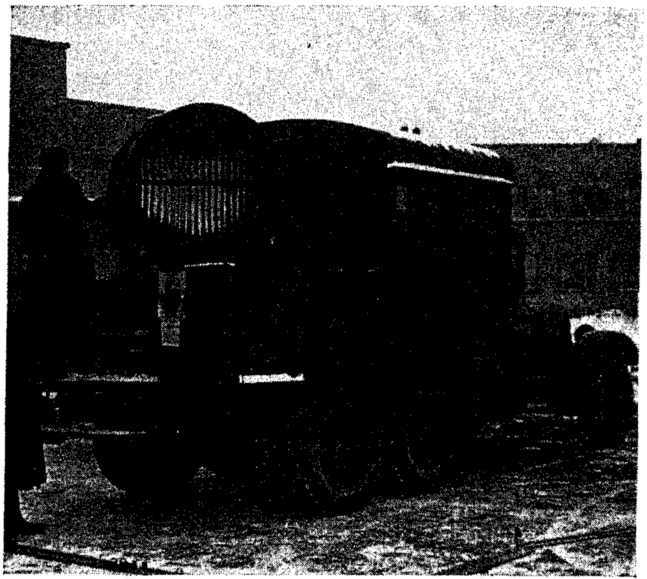
Air transport of troops and *matériel* is receiving increased attention, notably in Russia and France. It is on record that, at one manœuvre in the former country, 1,200 men and 18 guns, plus 150 machine guns, light and heavy, were transported 100m. and then landed by parachutes in 8 minutes. Complete field hospitals with full equipments of personnel and *matériel* have likewise been successfully so landed, the number of trained parachutists in the Soviet army now being estimated at 70,000. Ironically enough, parachutes have proved death traps for many Spanish aviators, their opponents machine-gunning them at leisure after they have left their disabled planes. Spanish war experience has failed to substantiate predictions that civil aircraft can readily and successfully be converted for military use, such planes as have been so converted having proved particularly vulnerable to attack by others of standard military types.

Anti-Aircraft.—The accuracy of anti-aircraft fire is constantly increasing, so much so that current observations indicate that the ratio of planes brought down by pursuit craft to those destroyed by gunfire from the ground, which during the World War was 5 to 1, has now been completely reversed in favour of the artillery. The so-called 'parallel barrage' in which batteries of anti-aircraft weapons, electrically controlled and synchronized, place a curtain of fire before an advancing plane, has proven highly effective. Searchlights up to 60in. diameter (mobile) and 80in. (fixed) now have a range, in clear weather, of 9,000yds. Employed in groups of four and converging on the target from points 2,000 to 4,000yds. apart, they render invaluable aid to the anti-aircraft artillery during night operations. Increased perfection in sound-ranging instruments (for detecting the sound of an aeroplane motor at great distances, and locating its position), has also been achieved, although the rapid development of motor silencers offers them a new problem to combat. Solution may lie, however, in a recent invention which locates a plane by heat rays emanating from its motor, even though this may at the moment be 'cut out' to confuse sound detectors.

Experimentally, 'grenade planes' armed with fifteen 45-lb. bombs to be released successively through 'torpedo tubes' from a position above and slightly ahead of a hostile bomber, are said to be under consideration by two major nations. Huge nets, pendant from floating balloons and designed to entrap oncoming aircraft, are reported as having been developed by at least one of the great Powers.

Tanks.—Armour is increasing in weight, it having been demonstrated that plates of less than 35mm. in thickness are vulnerable to infantry cannon. As a result, maximum speeds have been revised downward, though a battle speed of 18–20m.p.h. is still considered most desirable. Armament remains more or less standardized in the form of an automatic cannon of 37mm. calibre or thereabout, plus one or more machine guns per tank. Diesel power plants are under constant development, as are motors of more conventional design. France and Russia are devoting some attention to super-tanks weighing up to 70 tons. Certain observers hold that these possess capabilities even in excess of their size, maintaining that seven 100-ton tanks would equal in effectiveness on the field of battle 100 of seven tons. General practice, however, indicates a tendency towards standardizing on a light tank of eight to nine tons, and a heavier type of not over fifteen tons. However, mammoth 'support' tanks, mounting guns of up to 4in. and even 6in. calibre, are under consideration in France, and 'transport' tanks, for bringing up infantry to consolidate positions gained by battle tanks, appear also to be on the cards.

Anti-Tank Defence.—Here, various nations are employing single-shot, quick-firing, and automatic guns of calibres up to 47mm. One German school holds for the value of the first-named because of its readiness of concealment, one-man transport, and consequent possibility of heavy concentration at threatened points. Made in 13·35, 17, and 20mm. calibres, and weighing 65 to 90lb., these are modern elaborations upon the 13mm. anti-tank gun of World War fame. Admittedly effective against armour up to 25 or 30mm. in thickness, they would appear impotent against the stouter plating now being introduced.


Planet News]

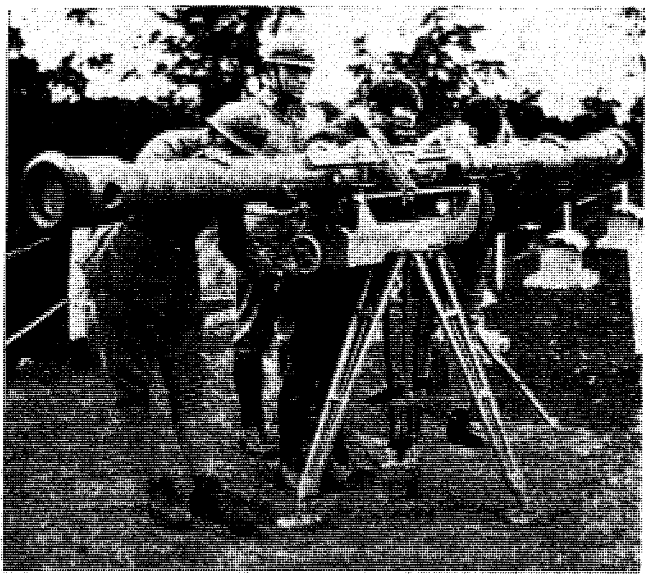
MOBILE ANTI-AIRCRAFT SEARCHLIGHT STATION FOR SOVIET ARMY

Apart from projectile weapons, other anti-tank agencies being given consideration are mine-fields and 'catch trenches' (*i.e.* tank traps). 'Tank Chasers', lightly armoured cars of high manœuvrability carrying guns capable of penetrating tank walls, have been tested, but, proving highly vulnerable, have required heavier armour, with consequent reduced speed, resulting in their gradual transmutation into veritable tanks themselves. Bombing from above, by aircraft, has not proved effective against massed tank attacks.

Artillery.—Trends are towards attaching more and heavier artillery equipment to infantry units. Thus the armament of a Russian infantry regiment now includes: 81 light machine guns, 60 heavy machine guns, 27 grenade throwers, 6 small cannon (37mm.), 6 regimental cannon (76mm.), and 2 anti-aircraft guns; while Italian practice hereafter will be to incorporate in each infantry regiment four pieces of pack artillery (*i.e.* a battery of 65 17mm. cannon). The United States has not gone so far in this direction, however, the tables of organization for an infantry regiment of 110 officers and 2,362 men in her new infantry division of 12,839 men (as against a World War figure of approximately 22,000) calling for 72 light machine guns, 36 heavy machine guns, and 36 light mortars.

Infantry Shoulder Weapons.—Despite the fact that various types of semi-automatic rifles were in use during the World War, no nation has as yet completely supplied its foot soldiers with *matériel* of this nature. Such a step is now in progress in the United States, however, that country having entered upon active production of the ·30 calibre Garand semi-automatic rifle, which will gradually supplant its present infantry piece, the Springfield rifle, model of 1903.

Chemical Warfare.—Progress in chemical warfare has


Fox Photos]
RANGE FINDER USED IN THE AIR DEFENCE OF PARIS

been almost entirely in the field of defence. All European nations, recognizing the possibility of sudden gas attacks, exerted during 1937 every effort towards developing adequate means for neutralizing the danger. Production of gas masks for civilian use in Great Britain reached the stupendous figure of 500,000 per week. This huge output made possible the very modest unit cost of but *2s.* *6d.* each. (Masks for combatant troops are more complicated, more expensive, and more efficient.) Germany designates her civilian-type masks as of three classes, one for men, one for women, and one for children. Italy is unique, in that her largest life assurance society now offers to advance to its policy-holders loans to finance the purchase of masks at 76·70 lire each.

General tendencies are towards standardization on three types of mask, the most effective for the military and civilians engaged in home defence activities, the second for civilians actively employed but not so engaged, and the third for inactive civilians. Gas-proof clothing for personnel assigned to degassing operations is being produced in increasing quantities. The construction of gas-proof shelters capable of housing one to 8,000 persons is actively under way. In one such, with a capacity of 25 people, power for operating the fan of the air-purifying and ventilating apparatus derives from a bicycle drive actuated by the foot-power of one man. Other similar machines to be operated by two to four men have capacities of about 25 persons per operator. Those with capacities of above 100 persons have motor-driven fans.

Engineer Corps Equipment.—Marked advance has been made in reducing the weight, and thus increasing the portability of pontoon boats, as well as of collapsible vessels designed for the transport of troops across small bodies of water. Thus Japan now employs four types of rubber row-boats, weighing from 7·16 to 34·24 lb., with capacities of from two men for the smallest, to four rowers and twelve passengers for the largest. Still another variety, weighing 54·43 lb., is used (in pairs) for the construction of rafts (a platform being added), capable of transporting a field-piece with its equipment, or 30 men. The United States has substituted a 1,100lb. aluminium boat for a former 1,800lb. vessel of wood, with highly satisfactory results. Swedish army engineers have developed practicable bridge-building materials from cardboard, which disintegrates in water after serving its purpose. In the field of signal corps equipment, considerable progress was recorded during 1937 towards increased perfection of two-way field radio apparatus. (*See* also WORLD ARMAMENTS; CHEMICAL WARFARE.) (C. GD.)

MUSIC. Music in 1937 continued to display the chastened mood that set in after three decades of feverish innovation. That period might be defined as extending from the earliest works of Debussy to the last of Alban Berg. Then one composer after another added to the technical armoury of his craft. New theories, new 'isms appeared in a procession which ultimately threatened to become monotonous. The lull began to set in a few years ago, and now the musical world is occupied in sorting out, testing, and assimilating the new devices it has acquired. This is naturally less exciting than inventing them, but in the end it is likely to prove more useful to the art of music. It is, however, having one unforeseen result, that of lessening the differences between composers and bringing them back to the use of a common language—or rather two languages, for one great cleavage still divides them, that between composers who are faithful to the principles of tonality and those who have deserted them for atonal methods. Apart from this one serious divergence there exist such affinities between young composers of different nations that one commentator on the 15th Festival of the International Society for Contemporary Music (Paris, June 1937) remarked that, if the country of origin of each work had not been indicated, no listener could have guessed it, as 'the more you heard, the more they seemed alike'. These festivals of music selected by an international jury, no two of whose members may be of the same nationality, constitute a useful gauge of musical fertility, but although primarily designed as an international arena for heterodox musicians who, in the nature of things, encounter opposition, it is noteworthy how, year by year, these become less conspicuous, and the festivals tend to rely more and more upon names which are either already famous or at least familiar. Thus, at the Paris Festival, apart from in memoriam performances of works by Dukas and Szymanowski, who had died during the twelve months preceding the Festival, the jury's selection included string quartets by Honegger and Milhaud, a Suite by Florent Schmitt, a Symphony by Malipiero, which had previously had its world première at Seattle, and other works by composers of note without which the festival would have proved of much less interest. There were works by Conrad Beck, Luigi Dallapiccola, Jean Françaix, Elisabeth Maconchy, Alan Bush, Hanns Eisler—all names previously known,—but there were no 'discoveries', unless a Concerto for string quartet and orchestra by Josep Valls be accounted such. The Poles arranged a separate concert at which works by Wojtowicz and Maciejewski were applauded, and there the story ends. The Maggio Musicale at Florence was mainly concerned with the past, but an evening was devoted to the memory of Respighi, whose posthumous *Lucrezia Romana* has been completed by his widow, and an oratorio by Malipiero, *La Passione*, was performed, but Casella's *Il Deserto Tentato*, although glorifying the conquest of Abyssinia, was not welcomed by the Florentines. The Venice Festival of Contemporary Music again brought mainly familiar names to the front: Stravinsky, Malipiero, Dallapiccola, Markievich, Françaix, and Roy Harris. The attention attracted by the International Society for Contemporary Music has led to the foundation of many similar festivals in different countries. But the general report of them is that there was nothing that excited either extravagant enthusiasm or acute controversy. Some say that the musical world is losing its capacity for either, but it is more likely that the capacity has not been put to the test. Yet the attention given to contemporary music has increased considerably. Early in 1937, the American League of Composers published a statement that during the previous six years it had performed 493 works by living composers, and the Federal Music Project at Washington has listed performances of 5,000 works by 2,000 American composers between Oct. 1935 and March 31, 1937. Among the various national sections of the I.S.C.M., the British (London Contemporary Music Centre) is outstandingly active, and the British Broadcasting Corporation devotes a monthly concert to contemporary music of the most challenging kind. In Paris, a new group has been formed after the pattern of Les Six, and the École d'Arcueil. It calls itself ' La Jeune France ', and consists of Olivier Messiaen (organist, pupil of Dukas), Daniel Lesur (Schola Cantorum), Yves Baudrier, and André Jolivet, eldest (born 1905) and least orthodox of the group.

The most remarkable trend in composition is the general return to the absolute, *i.e.* non-programme symphony, which would have aroused the surprise and envy of symphonists of the post-classic era. Glazunov, for instance, one of the last of them, composed his Eighth Symphony in 1904 and lived until 1936 without writing another. In the decade following upon the war period one might have thought the symphony moribund. In 1937 Miaskovsky eclipsed all modern records by composing his Eighteenth Symphony. In England Arnold Bax has reached his Sixth and there are rumours of a Seventh. During the year there have appeared noteworthy symphonies by Edmund Rubbra, George Dyson, and E. J. Moeran. In America symphonies have been produced, among others, by Emerson Whithorne, Samuel Barber, Bernard Wagenaar, and Anis Fuleihan. In Germany, Max Trapp has reached his Fifth. In Holland, Henk Badings is a representative symphonist. Rachmaninov's Second Symphony was composed in 1907. Thirty years afterwards, in 1937, he produced his Third. In most musical countries in which the form of the symphony has ever found a home, and in some others, composers have been producing symphonies with an activity unequalled since the nineteenth century and scarcely exceeded in its later decades. This remarkable phenomenon may be attributed in part to the magnetism of the high state of technical proficiency attained by the modern symphony orchestra, which Sir Thomas Beecham recently described as the most characteristic product of the present age in music. But in a broader sense it arises from the general reaction in favour of a return to the older forms which is so conspicuous a feature in contemporary music. To this reaction may be also attributed the feverish quest of forgotten masterpieces, the revival of symphonies by Johann Christian and Philipp Emanuel Bach, Boccherini, Clementi, and others, and the adaptation to the modern orchestra of old concerti grossi.

Another phenomenon is the increased interest taken in ballet, sometimes even at the expense of opera. This is conspicuous in England, but perhaps even more so in America, where new producing organizations have been formed and are still coming into existence. It is for one of these that Stravinsky wrote his ballet, *Jeu de Cartes*, produced in 1937 at the Metropolitan and since then in other countries. At Philadelphia, another concern has produced two characteristic American ballets, *Terminus* and *Barn Dance*. *Checkmate*, by Arthur Bliss, was produced by the Vic-Wells Ballet whilst on a visit to Paris in June 1937. In the spring it had presented *The Wedding Bouquet*, a choral ballet by Lord Berners, with text by Gertrude Stein. In the winter it produced Constant Lambert's *Horoscope*. A recently formed Polish Ballet visited London in the autumn with several new ballets by Polish composers. Other ballets mentioned in annals of the year are Florent Schmitt's *Oriane, la sans-égale*, Alex. Voormolen's *Diana*, Zdenek Hula's *The Blue Flower*, Vittorio Rieti's *David Triumphant*, Philippe Gaubert's *Alexandre le Grand*, Edwin Karhu's *L'Amour Triomphateur*, but it is impracticable to enumerate them all. The interest has grown to such an extent that it has been found expedient to provide a reference book describing the productions, on the lines of *The Complete Opera Book*, but although it appeared in 1937 it is already in need of a supplement to bring it up to date.

In comparison, the story of opera in 1937 is less eventful, although new productions have been numerous. In Germany, for instance, six new operas were produced in the month of November alone, but only Joseph Haas' *Tobias Wunderlich* appears to have attracted much attention. Two posthumous productions, of Alban Berg's *Lulu* and of Otakar Ostrčil's *Hansens Kõnigreich*, rank among the more important events. Other operas to be mentioned are Eugene Goossens' *Don Juan de Mañara*, Paul von Klenau's *Rembrandt van Rijn*, Othmar Schoek's *Massimilla Doni*, Wolf-Ferrari's *Il Campiello*, Malipiero's *Julius Caesar*, Vladigeroff's *Zar Kalosan*, Josef Mandič's *Mirjana*, Bernhard Paumgartner's *Rossini in Naples*, Hans Haug's *Tartuffe*, Jaromir Weinberger's *Wallenstein*, Roffredo Caetani's *Hypatia*, Albert Stoessel's *Garrick*, William F. Hanson's *The Bleeding Heart of Timpanogos*, and Walter Damrosch's *The Man Without a Country*, but it would require many pages to deal with the year's output of operas, and there is little reason to suppose that the rate of mortality among them will be any lower than in previous years. The taste in opera inclines strongly to established works. The success of the Mozart performances at Glyndebourne (Sussex) may be regarded as symptomatic. Although costly, and requiring a train journey from London, these admirable performances are so well supported that their advertisements are daily supplemented by the warning ' all seats sold '.

It would be tedious to pass in review, country by country, the activities of the musical world. Those that are interpretative, from repertory seasons to the travels of famous virtuosi, have no permanent interest, and the permanent interest of creative activities needs time to assert itself. In England there has been much such activity in chamber music, revealed in new works, of which Arnold Bax's Third String Quartet is the most important. There has also been remarkable productivity on the part of women composers, characterized for the most part by what a certain writer has called that terrible masculine earnestness rarely found in man. A pang of regret was occasioned by the retirement of Lionel Tertis, the ' apostle of the viola ', to whose playing and teaching is due the expansion of that instrument's repertoire. He had been troubled with oncoming rheumatism, and, sooner than not give of his best, he has resigned himself to give up playing. A feature in French music is the renewed interest in choral compositions, of which oratorios such as George Dandelot's *Pax* and Georges Migot's *The Sermon on the Mount*, and cantatas like Milhaud's *Cantate Nuptiale* for the golden wedding of his parents afford evidence. But this tendency has also been observed in other countries. Interesting examples are *The Glorified Kokila* by Piet Ketting, and *Jaani Tulemine* (Midsummer Night) by A. Vedro, respectively Dutch and Estonian. In England the coronation season produced two successful works: William Walton's setting of *In Praise of the City of London*, and John Ireland's *These Things Shall Be*. Germany's music continues to be affected by political issues, the most 'advanced' of her composers being forced to seek audiences elsewhere. One of the musically most active countries has been, as usual, Czechoslovakia, but even from the smaller countries which date their existence from Versailles, such as Estonia, come reports of increased attention given to music. In some other cases there is a lurking suspicion that authorities have discovered the value of music for propaganda purposes. If only all propaganda were equally harmless! An interesting development is the foundation, by Bronislaw Huberman, of the Palestine Symphony Orchestra at Tel Aviv. Its guest conductors have included Toscanini, Dobrowen, Dr. Malcolm Sargent, and others. Western music is expanding in Japan, where Alexandre Tcherepnin holds an annual contest in composition. This year's winner was Akira Ifukube, who is stationed in Hokkaido and self-taught, with *Bon Odori*, founded on a country dance tune. Another competition was sponsored by Joseph Rosenstock, conductor of the New Symphony Orchestra, founded 12 years ago by Viscount Hidemaro Konoye, who has recently been conducting in Europe and America. This brought to light: a Symphonic Suite by Toshiji Ogiwara; Adagio in modo antico by Kishio Hirao; Four Parodies by Shiro Fukai; Symphonic Étude by Bunya Koh; and a Piano Concerto by Saburo Moroi. Musical activities have come to a standstill in war-stricken Shanghai, but in the last month of 1936 there was produced there a ballet *The Dream of Wei Lien*, by Aaron Avshalamov (born Nikolaievsk 1894), who has made special studies in Chinese music, and its use of the pentatonic scales. It was performed by a Chinese cast with the Municipal Orchestra under the composer's direction, and is reported to have been a remarkably interesting production, musically and choreographically. If possibly the Far East is here given disproportionate attention it is simply because the extension of musical activities has become coterminous with the planet, and that, in itself, is a circumstance that claims to be placed on record.

The 1937 obituary list makes sad reading. In composers France would appear to have suffered the heaviest losses in the passing of Albert Roussel and Maurice Ravel, two of the outstanding figures of the generation which brought modern French music into world-wide prominence, Charles Widor and Louis Vierne, representing two generations of organist composers, and Gabriel Pierné, composer and conductor of the Colonne Orchestra. But the loss to Poland of her foremost composer, Karol Szymanowski, is for her equally severe, and Finland will miss Erkki Melartin, for some years director of the Helsingfors Conservatoire. In America the 'New England' school who may be regarded as precursors of the present activity in composition have lost Henry K. Hadley and Arthur Foote. In a different sphere the death of George Gershwin was a blow, for he had aroused definite hopes of bridging the unfortunate gulf between popular music and that of the concert-room. Within a few days America lost the two last survivors of the 'old guard' in musical criticism, Richard Aldrich and W. J. Henderson, whose names were honoured throughout the English-speaking world of music. Another critic of international fame who died during the year was Paul Bekker. Herbert Hughes, the English critic, was more widely known as a composer, and adapter of Irish folksongs. In the world of education, England suffered by the deaths of Sir Henry Hadow, brilliant essayist, and Sir Arthur Somervell, composer and member of the board of education, and America by that of Frank Damrosch. A virtuoso well known to music-lovers of the older generation was Jenö Hubay, the Hungarian violinist, teacher, and composer for his instrument. The concert world of to-day will sadly miss Harold Samuel, whose many series of recitals devoted to Bach's keyboard music had considerable following on both sides of the Atlantic. Other losses sustained by the English musical world were those of W. W. Cobbett, who for many years played a part analogous to that of Mrs. E. S. Coolidge in America; Alfred J. Clements, the organizer for more than half a century of the famous South Place chamber concerts, of which some 1,200 were given under his direction; Lilian Baylis, the creator of those remarkable institutions, the Vic-Wells Opera and Ballet; Maud Valerie White, a successful song writer; Ivor Gurney, a promising composer, born 1890, whose later years were clouded by after effects of war sufferings; and Graham Peel, who will be remembered chiefly for his setting of 'In summertime on Bredon'. (E. E.)

MUSSOLINI, BENITO (1883—), Italian statesman and dictator; born at Predappio, and educated at Lausanne University, entered journalism, and edited Socialist papers before the World War, in which he served and was wounded; became premier of Italy after the Fascist 'March on Rome', 1922.

After qualifying as an air pilot on Jan. 12, 1937, Signor Mussolini in March visited Libya to inaugurate the new strategic road driven westward along the coast from the Egyptian frontier. In June he received the Grand Cross of Hitler's recently established Order of Merit of the German Eagle. At the end of July Mr. Neville Chamberlain, the British premier, addressed a personal letter to Mussolini expressing his hopes for the resumption of normal and friendly relations between the two countries, and the recipient replied in a like friendly strain, following up this gesture by a speech on Aug. 20, at Palermo, where he had attended the Italian naval manœuvres, in which he asserted that a permanent reconciliation with Britain was possible, and referred to the Italian determination to keep Bolshevism out of the Mediterranean.

From Sept. 24 to 29, Mussolini was in Germany, visiting the Krupp works, attending the German army manœuvres, and conferring on Herr Hitler the title—shared only with himself—of 'Corporal of Honour' in the Fascist militia. On the 28th he addressed, with the new Corporal, a large audience in the Berlin Olympic Stadium. On Oct. 28, in the presence of Hitler's representative, Herr Rudolf Hess, Mussolini celebrated in his capital the anniversary of the 'March on Rome' by distributing medals to the relatives of 1,790 Italian soldiers killed in the Spanish civil war, and laid stress in a speech on the growing friendship between Italy and Germany. The following day he inaugurated Aprilia, the fourth town to be built on the newly drained Pontine marshes. On Nov. 20 was announced Mussolini's assumption of the portfolio of Italian Africa in his own cabinet; and his last important act of the year was to announce, in a speech at Rome on Dec. 11, Italy's decision to leave the League of Nations.

MYSORE. A Hindu State with just claims to be the most progressive in India. Area, 29,436sq.m. ; population, 6,557,302, of whom 92 per cent. are Hindus. Though the city of Mysore (pop. 107,142) is the dynastic capital, the seat of administration is the 'civil and military station' of Bangalore (pop. 306,470). The ruler is the Maharaja, Sir Shri Krishnaraja Wadiyar, with a 21-gun salute ; and his dynasty dates from the fourteenth century. His Highness has a council of administration, consisting of the Dewan or chief minister and two or three others. For the last 30 years the State has been almost unique in having a legislative council (50 members) which enjoys wide legislative and financial powers. There is also a representative assembly of about 250 members, with consultative functions. Akin to the political advance has been the economic development of the State on western lines. The water power of the country has been harnessed for a widespread supply of electrical energy employed in agriculture and industry. The Kolar fields produce gold to the value of about £2 millions annually. Irrigation is generously provided, rice, millets, and pulses being the chief crops. There are six cotton mills in the State, with over 2,000 looms, and four woollen mills. A remarkable instance of the enlightened character of the administration occurred in Oct. 1936, when the Maharaja, though a strictly orthodox Hindu, admitted (for the first time known) members of the depressed classes to participate in the ceremonials connected with the celebrations of the Dusara festival. How striking a breach this effected with the age-long caste tradition can be appreciated only by those who have seen its rigidity on the spot. (ME.)

N

NAHAS PASHA, MUSTAPHA, Egyptian statesman and nationalist leader, of humble parentage, started as a telegraph clerk, but later qualified in law at Cairo and became a judge. After the World War, his activities as a nationalist led to his deportation, with Zaghlul and others, to Malta, but his exile was brief, and he became chief Wafdist representative in Sarwat Pasha's Coalition government, and, on Zaghlul's death in Aug. 1927, leader of the Wafdist Party. In Feb. 1928 he successfully opposed the projected treaty with Great Britain because it did not provide for the complete evacuation of the British troops. He was premier from March to July of that year, and again for a short time early in 1930. In March 1936 he headed the Egyptian delegation to the conference that preceded the signing (Aug. 26) of the Anglo-Egyptian Treaty of Alliance, by which Egypt attained sovereign statehood, and in May again became premier, holding also the portfolios of the interior and health. In April–May 1937 he led the deputation to the Montreux Conference, and added to his popularity by negotiating the abolition of the Capitulations (*q.v.*). Later, together with Prince Mohammed Abdel Moneim, he represented Egypt at the coronation of King George VI.

On Nov. 28, 1937, an attempt on his life was made near Heliopolis by a young anti-Wafdist 'Greenshirt', who turned out to be a grandson of Arabi Pasha—whose revolt in 1882 led to British intervention in Egypt. The country was deeply stirred by the news of this attempted assassination, for Nahas Pasha is everywhere regarded as a calm and confident statesman, entirely honest, disinterested, and loyal to his comrades and countrymen.

On Dec. 30, following a disagreement between King Farouk and Nahas Pasha concerning, among other matters, a projected Bill to protect the Constitution and the maintenance by the Wafdists of a 'Blueshirt' army, the king dismissed Nahas Pasha together with the entire cabinet.

NANKING, the capital of the central government of China, lies on the south bank of the Yangtze River, 235m. from the sea. Its estimated population in 1937 was 1,000,000. After the outbreak of the Sino-Japanese War (*q.v.*), Nanking was bombed by Japanese aeroplanes in August and September; and by November it was clear that the Japanese intended to enter the city. On Nov. 16 the Chinese central government transferred its capital to Chungking, in Szechuan province. An ultimatum to surrender was rejected on Dec. 9, and on Dec. 13 the city fell. An autonomous commission was set up on Dec. 23 under Tao Hsi-shan, and a measure of order was restored.

NATAL, province of the Union of South Africa since its formation in 1910, formerly (from 1845) a British colony, includes Zululand (annexed to Natal, 1897). Its area is 35,284sq.m., of which Zululand occupies 10,427; population (1936) 1,946,640, including 1,756,089 natives and Asiatics. The seat of government is Pietermaritzburg (pop. 36,000); Durban (pop. 259,647) is the largest town, and an important seaport.

The sugar industry is of prime importance; cattle, maize, and fruit are produced, and coal and iron mined. A scheme for the development of Durban harbour at a cost of one and a half million pounds was approved in 1937.

Primary education is controlled by the provincial government, higher by that of the Union; about 500 state-supported schools for white children exist, and 820 schools for natives and Asiatics. The provincial revenue and expenditure in 1935–36 were £1,754,064 and £2,066,910 respectively. For further details and history in 1937, *see* SOUTH AFRICA, UNION OF.

NATIONAL DEBTS. In all but a few instances, the year 1937 was one of increasing national debt. In the United States, the amount passed $36,000 millions, despite the desire of the administration to reverse the rising trend. In Great Britain, there was little change during 1936 and early 1937, but authorization of a £400 million rearmament programme, of which one-quarter was funded in April, extended the debt beyond £8,000 millions. Large increases also proved necessary in France, Germany, and Russia, it being only in smaller countries like Austria, Hungary, Norway, Poland, and Sweden where reductions were made.

There are several factors which make a comparison of national debt structures difficult. Not only must one rely on figures from government sources which are usually interested in underestimating their debt burden, but one must also use exchange rates which are variable in the changing of figures so that debts may be compared. In many countries, too, a large amount of public debt is carried by localities, which, while omitted in this discussion, actually adds greatly to the economic burden of many nations when compared with those where local obligations are small. Bearing such limitations in mind, however, it is interesting to compare the status of leading nations in respect to their national debt. While figures are not for the same date, they represent the general picture for the year with the translation of exchange based on the rates of Dec. 31, 1937.

The accompanying table shows that Great Britain and the United States had by far the largest debts, the former slightly exceeding and the latter rapidly approaching £8 millions. France with over £2,600,000, Germany with over £1,400,000, Italy with over £1,200 millions, and Canada, Russia, and Japan with over £600 millions each, followed. *Per capita* figures, however, offer a more satisfactory method of comparing the debt burden of these countries. Thus, while Great Britain and the United States have debts of approximately the same size, the individual burden in Great Britain is £178·3, compared with but £56·36 in the United States. In fact, despite their smaller total debts, Canada (£68·2), France (£62·38), and even Switzerland (£59·47) also exceed the United States on a *per capita* basis. Other burdens exceeding £40 were Belgium (£47·38), Netherlands (£46·56), and Australia (£41·97). At the opposite end of the scale were Bulgaria (£1·52), Colombia (£2·79), and Finland (£3·85), as well as the populous countries of China (£0·45) and Russia (£4·29), whose large debts were small in proportion to the number of inhabitants.

Classification of the British debt reveals that £3,519,079,197 or 44·4 per cent. was in unfunded internal obligations, £3,364,884,607 or 42·5 per cent. was funded, and the remainder of £1,032,563,090 was external. By far the largest single item was the 3½ per cent. war loan, which

TABLE OF NATIONAL DEBTS, 1937

Country	Date, 1937	1937 Debt in Local Currency	1937 Debt in £ Sterling	*Per Capita* Debt	Date, 1936	1936 Debt in Local Currency
Australia	6/30	350,291,499 pounds	280,233,200	41·97	6/30	346,576,294 pounds
Austria	1/1	3,567,300,000 schillings	134,915,286	19·96	1/1	3,691,600,000 schillings
Belgium	9/1	57,229,000,000 francs	389,145,488	47·38	9/1	55,799,000,000 francs
Bulgaria	1/1	1,363,886,462 francs	9,255,546	1·52	1/1	989,569,946 francs
Canada	3/31	3,542,521,139 dollars	707,656,221	68·20	3/31	3,431,944,026 dollars
China	1/1	1,023,202,581 dollars	204,640,516	0·45	1/1	818,573,352 dollars
Colombia	6/30	247,905,755 pesos	24,771,575	2·79	6/30	229,187,988 pesos
Czechoslovakia	1/1	46,726,577,368 koruna	327,453,866	22·26	1/1	40,933,673,851 koruna
Denmark	9/30	1,229,000,000 kronen	54,850,270	14·80	1/1	1,220,000,000 kronen
Finland	9/30	3,182,900,000 finmarks	14,084,332	3·85	9/30	3,116,000,000 finmarks
France	8/31	384,591,000,000 francs	2,609,912,484	62·38	8/31	360,645,000,000 francs
Germany	6/30	17,437,600,000 reichmarks	1,406,424,264	21·29	6/30	15,463,000,000 reichmarks
Great Britain	3/31	7,916,526,894 pounds	8,012,518,631	178·30	3/31	7,916,412,462 pounds
Greece	1/1	79,877,364,868 drachmae	146,514,965	21·80	1/1	75,000,000,000 drachmae
Hungary	6/30	1,762,260,000 pengos	70,495,674	7·92	6/30	1,918,287,000 pengos
Italy	4/30	114,252,635,000 lire	1,203,080,247	28·24	9/1/34	170,000,000,000 lire
Japan	9/30	10,785,600,000 yen	626,859,072	9·08	9/30	10,127,500,000 yen
Netherlands	1/1	3,544,695,000 guilders	394,595,447	46·56	1/1	3,459,022,000 guilders
Norway	1/1	1,602,000,000 kroners	80,468,460	29·76	1/1	1,634,000,000 kroners
Peru	1/1	711,928,000 soles	34,844,472	5·37	1/1	690,417,527 soles
Poland	3/31	4,729,831,388 zlotys	139,544,399	5·39	3/31	5,007,800,155 zlotys
Rumania	4/1	108,449,171,124 lei	162,673,757	8·55	4/1	108,042,534,865 lei
Russia	1/1	23,304,892,925 roubles	711,682,449	4·29	3/31	19,908,892,925 roubles
Sweden	6/30	2,236,798,066 krona	115,322,064	18·50	6/30	2,387,183,493 krona
Switzerland	1/1	5,760,513,000 francs	246,423,726	59·47	1/1	5,204,571,000 francs
Turkey	5/31	508,623,916 pounds	81,746,036	4·67	5/31	505,762,473 pounds
United States	6/30	36,424,613,732 dollars	7,284,922,746	56·36	6/30	33,778,543,494 dollars
Uruguay	1/1	307,865,488 pesos	33,868,198	16·59	1/1	302,687,889 pesos

totalled £1,911,458,825. So many changes occurred in individual items of the United States debt during the fiscal year, June 30, 1936, to June 30, 1937, that the following chart is necessary to indicate their nature:

	June 30, 1937	June 30, 1936
Held Outside Treasury:	Million $s	Million $s
Pre-war bonds	198	200
Treasury bonds	19,936	17,168
U.S. Savings bonds	800	316
Adjusted Service bonds	389	945
Treasury notes	10,617	11,381
Treasury bills	2,303	2,353
Matured debt, no interest	119	169
Debt bearing no interest	506	620
Held for Special Funds:		
Government Life Insurance	500	—
Old Age Reserve Account	267	—
Government Retirement	315	281
Adjusted Service Certificate Fund	38	127
Unemployment Trust Fund	312	19
Postal Savings System	30	100
Federal Deposit Insurance	95	100
Total	$36,425	$33,779

Although the growth in the amount of bonds outstanding accounted for a majority of the debt increase, a considerable portion (41 per cent.) was composed of funds which, while adding to the debt, were paid from new and specialized sources of revenue collected for a definite purpose. The outstanding reduction was in adjusted service bonds and certificates, which were paid off to war veterans at a rapid rate.

Warnings against mounting debt structures were frequent during 1937. Despite the general alarm, however, there were no important defaults, although there was considerable refunding to secure lower interest rates. Changes in the valuation of currencies of certain countries complicated the international situation and caused sudden shifts in debt inter-relationships. With the business recession of the last months of the year seriously reducing incomes in many countries, there was little indication that the rising debt trend would be reversed for some time to come.

NATIONAL DEFENCE CONTRIBUTION.

Having come within £1,500,000 of balancing his 1937–38 budget (*see* BUDGET: *Great Britain*), Mr. Neville Chamberlain aroused surprise by announcing a new tax, the 'National Defence Contribution', on the growth of the profits of trades. He reminded his hearers that, whereas he had forecast a rising defence expenditure for the next two or three years, he was proposing to borrow in 1937 the full average sum authorized to be spent out of loan for that purpose. To meet the future rise in budget expenditure, he needed 'some device capable of growth in itself but easily adjustable'. From current profits (less losses) would be deducted either of two standards, at the taxpayer's choice: the 'capital standard', being for companies 6 per cent., for individuals and firms 8 per cent., on the capital employed; or the 'profits standard', being the average profits of 1933, 1934, and 1935. The remainder would be taxed at a graduated rate from nil to one-third, according to the profit ratio and to its relative growth. This 'special and temporary' contribution would not apply to professions or employment, or to profits below £2,000. Its estimated yield for 1937–38 was £2 millions and in a full year £20 millions to £25 millions.

The proposal provoked widespread opposition. Critics claimed that the tax was uncertain in incidence, required elaborate accountancy, and penalized young and enterprising concerns and those that had suffered most severely during the depression. As a result, the Finance Bill embodied a number of amendments, chiefly these: the 'profits standard' would be the choice of the three best years between 1933 and 1936 or the two best between 1933 and 1935; the exemption limit of 6 per cent. under the 'capital standard' would be raised in cases of exceptional risk, wastage, or deferred yield; and the scale of tax was lowered. These and other concessions would reduce the annual yield to £15 millions.

When, however, the new chancellor of the exchequer, Sir John Simon, presented the Bill on June 1, he faced such damaging parliamentary opposition that Mr. Chamberlain, now prime minister, intervened with a promise to substitute a simpler tax, yielding £25 millions a year. This new version consisted of a flat rate of tax—5 per cent. for companies and 4 per cent. for unincorporated concerns—upon all profits, after deducting interest and other annual charges. Professional incomes, and profits of public utilities with statutory limitations on their prices or dividends, would be exempt, and the tax might be wholly or partly remitted in order to encourage industry to settle in the Special Areas. The contribution, accepted by Parliament in this form, was estimated to yield £25 millions in a full year, subject to proportionate loss of income-tax. (H. V. H.)

NATIONAL FARMERS' UNION. In 1936 the Union, which has 130,000 members in England and Wales, took the initiative in setting up a Co-ordinating Committee with the Farmers' Unions of Scotland and Northern Ireland. It is also represented on a Standing Joint Committee with the Central Landowners' Association. The Union in 1937 accepted an invitation to send representatives to an Empire Producers' Conference, to be held in Sydney, N.S.W., in March 1938, which is to consider, *inter alia*, the question of setting up a permament body to represent farmers' interests throughout the Empire. This is a matter of great importance in view of the Ottawa and foreign trade agreements.

The year was notable for the passing of the Livestock Industry Bill and the Agriculture Bill. In connexion with the former, the Co-ordinating Committee of the three Unions nominated Lord Bingley as representative of the interests of United Kingdom producers on the International Beef Conference and Empire Beef Council. The Union set up a Diseases of Animals Committee, which will function in connexion with the disease eradication programme under the Agriculture Act.

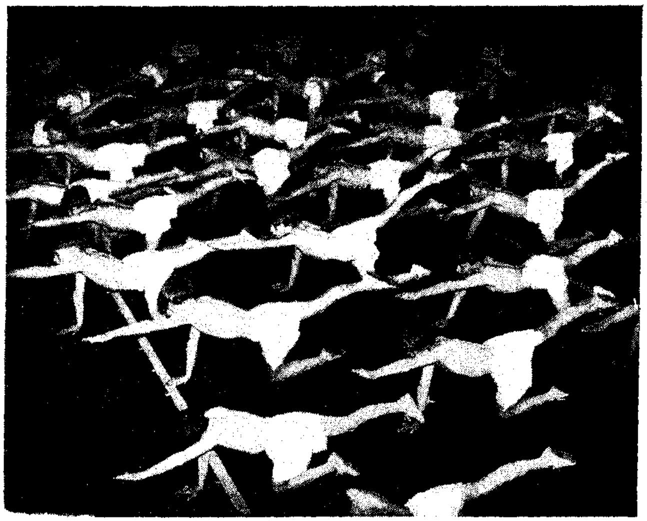
The question of long-term milk policy was prominent in 1937, and the Union pressed strongly for modifications of the White Paper on the subject published by the government in July. The minister of agriculture made certain concessions when he met a deputation from the Union in December.

The operation of the Pigs and Bacon Marketing Schemes was at a standstill during the year, and the Union communicated to the ministry of agriculture its views as to the amendments required to secure the successful working of the Schemes. Legislation on the subject is expected in 1938. Proposals were also submitted to the ministry affecting the organization of egg marketing.

The Union again represented producers' interests in the negotiation of contract terms and conditions for the growing of sugar beet in 1938, and unsuccessfully opposed before the Railway Rates Tribunal the railway companies' application for a 5 per cent. increase of rates and charges.

In spite of a further advance in the level of agricultural wages, there was again a reduction in the number of workers engaged in agriculture, owing largely to the demand for labour arising from the government's rearmament programme. Renewed representations on the subject were made by the Union to the government. (C. Fy.)

NATIONAL HEALTH AND FITNESS CAMPAIGN, THE. The quest for fitness is no new thing. The very language of the familiar phrase *Mens sana in corpore sano* betrays its antiquity, and the ideal of a community healthy both in body and in mind goes back to the heyday of Athens and Sparta. The same ideal is expressed to-day in the pursuit of a ' Fitter Britain '.



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BOYS OF THE LEYTON COUNTY HIGH SCHOOL AT PHYSICAL TRAINING. FIRST YEAR BOYS ARE SHOWN PERFORMING THE LEG AND ARM BALANCE

It has been estimated that £500 millions is spent annually in various forms of social service and benefit in Great Britain, equivalent to more than £1 a week for every working-class household. These figures include special health services for mothers, babies, and schoolchildren, and for those suffering from tuberculosis and other infectious diseases, in addition to basic sanitary services like water supply and the disposal of sewage and other waste products. They include, too, the betterment of working-class housing: nearly £180 millions has been spent on this service since the War out of national taxes, without including contributions from local rates—a gigantic national investment which has helped to provide nearly 3½ million houses in that period, or enough to house a third of the entire population of England and Wales. There are also the great schemes of social insurance, which in return for small weekly contributions ensure, not only medical attendance and a cash allowance during sickness to the great bulk of the working population, but also widows', orphans', and old age pensions for the contributors and their dependants.

The development of these services has coincided with an enormous improvement in national health. Within the last 50 years alone the standardized death-rate has fallen from 18·7 to 9·2 per thousand, the infant mortality rate (deaths of infants under one year) from 138 to 59 per thousand live births, and the deaths from tuberculosis from 2,450 to 657 per million. The expectation of life of a newborn child to-day is 19 years longer than in the '60's.

So far so good, but there should be no limit to health progress. Two special efforts are at present in progress. The object of the first is to ensure a fuller use of the existing health services; the second is to improve the national physique by encouraging and extending the facilities for physical training and recreation.

The health services are so obviously valuable that it is a little curious that better use is not made of them. Yet such is the case; only about half the school population who could do so make use, for example, of the admirable scheme for getting one-third of a pint of milk a day for ½*d.*, which is half the ordinary price. The national campaign now in progress has marshalled all the resources of modern publicity

Fox Photos]

GIRLS AT BEDFORD PHYSICAL TRAINING COLLEGE REHEARSING A DISPLAY, WHICH THEY GAVE AT THE FESTIVAL OF YOUTH AT WEMBLEY ON JULY 3, 1937

under the slogan 'Use your Health Services' with the object of getting more mothers to seek medical advice about their own and their infant's health, better use of the school health services and the milk-in-school schemes, and readier recourse to examination and treatment when tuberculosis or other infectious disease is suspected.

It would be still more paradoxical for the nation which has taught the world so many games to lag behind others in bodily physique and the healthy use of recreation. An Act passed in 1937 allocated £2 millions of government money to help provide such things as more sports grounds, and community centres; and the National Fitness Council, which the Act set up, has wisely decided that here also intensive publicity is necessary to success. The slogan of their campaign is 'Fitness wins', and it carries the good wishes of all who care for the welfare of Great Britain. (K. W.)

NATIONAL INCOME. The reader is advised to give adequate consideration to the following qualifications before drawing any conclusions from the accompanying tables.

In the United States, estimates of the national income have been prepared with a degree of completeness and care which is equalled by few if any countries. While research in this field in Great Britain and some other countries was begun earlier than in the United States, the general absence of continuous participation by governmental or independent research agencies in these countries has delayed progress. Most of the estimates shown in Table I are unofficial, and many are so lacking in comparability from one period to another as to discourage too much reliance on changes in their relative magnitudes. The inherent limitations of the various estimates may be assigned to two elements, namely, the differing accuracy of the figures themselves and differences in the concepts and scope of the estimates.

While statistical source materials in the United States and Great Britain still leave much to be desired, the various censuses, income-tax reports, and other primary reports nevertheless provide data well in advance of most other countries. National income has been defined in innumerable ways by economists and statisticians. In the United States, estimates are presented for the national income produced, which is defined as 'the net value of goods and services produced', and also for national income paid out, which represents 'compensation to individuals for the labour, capital, and management services they render'. Generally, most of the estimates included herein tend to represent income produced. Differences in the scope and coverage of the various series, however, are particularly significant. Some economists still advocate the inclusion only of physical commodities and the exclusion of intangible services in estimates of the national income. In the United States, commodity-producing industries contribute only half the national income as currently measured. There are also differences of opinion concerning the inclusion of income in kind, such as commodities consumed on the farm by farm families, board and lodging furnished for domestic servants, or meals supplied to restaurant employees. Certainly the exclusion of farm products consumed on the farm would markedly affect the estimates for agrarian nations. Also, imputed income from owned durable goods, such as houses, is included in some estimates and excluded in others.

Generally, the income figures include only the production of those goods and services which enter into the exchange economy. In countries where a substantial portion of the production takes place within the family unit, the estimates based only on commodities entering into market operations provide very limited comparisons with estimates of other countries. For many of the figures included in Table I it is impossible to ascertain exactly what is included and excluded, since the estimates often represent merely over-all approximations without adequate consideration of the degree of coverage.

Price Factors.—Of perhaps equal importance and confusion with the problems of concepts and scope are the qualifications arising out of converting the figures for different countries into the currency of one country, and of the effects of differences in costs of living. National income is of necessity measured in terms of money because of the absence of any other unit for evaluating and combining various goods and services. When prices are fluctuating within a relatively narrow range, the dollar income estimates from year to year are valuable indicators of changes in real income. However, when prices fluctuate widely, unless rates of foreign exchange reflect such variations, the conversion of the estimates into dollars or pounds or any other single monetary unit introduces errors. Under a situation where there are no trade barriers and no control over foreign exchange, perhaps the exchange rates would vary with price trends or vice versa, but since 1931 the changing gold or silver contents of currencies and numerous restrictions on foreign exchange have rendered almost meaningless the conversion into one currency. Therefore, it is suggested that the figures in the middle or late 20's provide a more satisfactory basis of comparison than do the estimates for recent years.

In addition to the matter of price changes and rates of exchange, it is necessary to add a word of caution in using varying *per capita* incomes as measures of standards of living. In the United States, *per capita* incomes are generally lower in the southern States than in the north and in rural areas than in urban centres. However, these differences do not measure variations in standards of living, economic status, and general well being. Life on farms is inherently different from that in cities, and cannot be subjected to comparable measurement in terms of dollars. The same is true for different countries.

The degree of industrialization and urbanization is, therefore, a significant factor in evaluating the varying *per capita* incomes.

TABLE I

Per Capita National Incomes in Various Countries

Country	Middle 1920's			Late 1920's			Most Recent Years		
	Year	Population (in millions)	*Per Capita* Income (£)	Year	Population (in millions)	*Per Capita* Income (£)	Year	Population (in millions)	*Per Capita* Income (£)
Australia	1924	5·9	108	1927–28	6·2	104	1933–34	6·7	73
Bulgaria	1926	5·5	13	1929	5·8	12	1934	6·1	10
Canada	1927	9·5	119	1930	10·2	120	1936	10·9	83
Chile	—	—	—	1929	4·4	37	1934	4·5	24
Czechoslovakia	1925	14·2	36	1929	14·6	38	—	—	—
Denmark	1927	3·5	55	1929	3·5	58	1935	3·7	49
Finland	1926	3·6	24	1929	3·6	28	1936	3·8	24
France	1928	41·0	41	1929	41·1	48	1936	41·9	56
Germany	1925	62·4	47	1929	64·0	58	1936	67·1	74
Great Britain	1924	44·8	90	1929	45·7	96	1935	47·0	95
Greece	1927	6·8	20	—	—	—	1933	6·7	12
Hungary	1927	8·5	23	1929	8·7	19	—	—	—
India	1924	330·0	8	1929	352·8	6	—	—	—
Italy	1927	40·8	24	1929	41·5	26	1932	41·8	24
Japan	1925	59·7	14	1928	64·4	18	1936	69·2	11
Latvia	1925	2·1	11	—	—	—	1935	2·0	33
Netherlands	1925	7·4	59	1928	7·6	76	—	—	—
Norway	1927	2·8	52	1929	2·8	43	1936	2·9	40
Spain	1924	22·1	34	1927	22·4	32	—	—	—
Sweden	1924	6·0	60	1930	6·1	69	1936	6·3	70
Switzerland	1924	3·9	88	1929	4·0	92	1935	4·2	115
United States	1924	114·9	134	1929	121·5	137	1936	128·4	100

TABLE II

Recent Trends in National Income

	1929	1930	1932	1933	1934	1935
In Currency of each Country (Indexes 1931 = 100)						
Canada	—	126·9	83·9	83·2	95·6	101·8
Denmark	104·2	105·6	95·8	100·0	108·5	115·4
Finland	132·6	120·3	100·7	110·1	129·7	136·2
France	107·0	106·1	90·0	86·9	82·1	75·1
Great Britain	112·7	110·3	98·8	101·9	109·0	117·5
Germany	132·0	122·1	78·8	80·7	91·5	99·7
Japan	—	—	—	114·2	119·8	124·3
Norway	110·2	110·1	100·0	95·3	98·0	104·1
Sweden	—	110·5	94·4	94·4	105·9	115·6
United States	151·0	127·0	73·9	78·2	92·7	102·7
In Terms of Constant Prices of each Country (Indexes 1931 = 100)						
Canada	—	105·6	90·6	89·4	96·3	101·8
Denmark	79·0	92·6	93·1	91·0	91·2	94·7
Finland	113·6	112·3	94·0	103·9	121·1	127·2
France	85·6	101·0	105·5	109·3	109·5	111·3
Great Britain	86·6	96·8	101·3	104·3	108·6	115·9
Germany	106·6	108·6	90·6	95·8	103·2	108·6
Japan	—	—	—	97·4	103·2	102·5
Norway	90·3	98·0	100·0	95·3	96·5	100·1
Sweden	—	100·6	96·1	98·0	103·2	110·6
United States	115·7	107·3	83·2	86·4	90·3	93·8

Use of the Estimates.—As previously stated, the estimates presented are derived from a great variety of sources. These figures have been converted into sterling on the basis of average foreign exchange rates for each year, and resulting *per capita* incomes have been obtained by dividing the best available population estimates for each year into the income totals.

In view of all the qualifications discussed above, the reader might well question the validity of gathering together and presenting such estimates. However, while these qualifications are numerous and substantial, there are certain variations which are so marked and persistent as to allow significant conclusions. Generally, the United States, Great Britain, Canada, Switzerland, and Australia appear to fall into a distinctly higher *per capita* income range than do the other countries, and supporting general information also reveals the highest standards of living in these countries. The next income range includes Germany, France, the Netherlands, Denmark, and Sweden, which again reflects what one would expect from related evidence. The smaller Central and Southern European countries are in a distinctly lower class. The extremely low income of India is probably indicative, as are those also of China and the balance of Asia. The income estimates of the U.S.S.R. are less susceptible to conversion into sterling than those of other countries, but occasional sterling estimates during 1920 indicated average incomes in Russia of approximately the same level as the smaller European countries.

The figures in Table II show the recent trends in national income in those countries where continuous data are available. In the lower half of the table, the figures represent the indexes of real income in so far as the wholesale prices used to deflate the monetary incomes are representative of general price changes. Obviously, this is not entirely satisfactory. The low points of the depression and the extent of recovery vary substantially from country to country. When the indexes are adjusted for price changes, it becomes apparent that the recovery in many countries has been a pure price phenomenon. Also, in some countries, particularly Great Britain and France, real income continued up throughout the period shown. However, the sensitiveness of the wholesale price indexes probably are at least partially responsible for such results. (R. R. N.)

NATIONAL INSURANCE. Industrial workers in Great Britain and Northern Ireland are more fully protected by State action against sickness, unemployment, poverty, and old age than in any other country.

The latest addition to the series of national insurance schemes is the Widows', Orphans' and Old-age Contributory Pensions Act, which operates from Jan. 1, 1938. This scheme includes black-coated workers and others of limited means of both sexes, who were not previously eligible for inclusion within manual workers' schemes. Men contribute 1*s.* 3*d.* a week for all benefits, 10*d.* a week for widows' and orphans' pensions only, and women 6*d.*, for old age and orphans' pensions. Until Jan. 2, 1938, applicants were admitted up to 55 years of age; after that date the age limit for admission is 40, and contributions will be on a sliding scale according to age at entry. The main qualifying conditions for pensions are: for a widow's or orphan's pension—that 104 weeks have elapsed and 104 weekly contributions have been paid since the date of entry into insurance; for old age pension—continuous insurance for 10 years immediately before the age of 65 and payment of 260 weekly contributions. Benefits under this scheme are: widow's pensions of 10*s.* a week, with 5*s.* for the eldest child and 3*s.* for others; orphan's pensions of 7*s.* 6*d.* a week, and old age pensions of 10*s.* a week at the age of 65 for insured men and women and also for the wives of men pensioners at the same age. Income limits for entry to this scheme are £400 a year for men and £250 for women, of which up to £200 and £125 respectively may be unearned. Sir Kingsley Wood, M.P., Minister of Health, when introducing this scheme in the House of Commons in April 1937, anticipated that 2 million persons would be concerned in this measure.

Hitherto all manual workers and non-manual workers receiving less than £250 a year, unless holding exemption certificates, have been required to take out health, pensions, and unemployment insurances. Now more than 19 million persons are covered by the health and pensions sections.

The State provides part of the cost of benefits and administration of the health and pensions schemes, but the main contributions are from employers and workers. Income and expenditure of these schemes annually is:

Income	£	*Expenditure*	£
Contributions .	28,000,000	Benefits:	
Interest . .	6,000,000	Sickness .	10,000,000
Parliamentary Votes	6,000,000	Medical. .	10,500,000
		Disablement .	6,500,000
		Maternity .	1,500,000
		Other . .	2,500,000
		Administration .	5,500,000
	£40,000,000		£36,500,000

For the combined health and pensions schemes, men contribute 1*s.* 8*d.* weekly and women 1*s.* 2*d.*

Benefits include: sickness—men 15*s.*, women, unmarried and widows, 12*s.*, married 10*s.* weekly; disablement benefit, men 7*s.* 6*d.*, women 6*s.* weekly; maternity benefit, 40*s.* Sickness benefit may continue for 26 weeks, after which disablement benefit is payable.

Unemployment Insurance.—The first experimental unemployment insurance scheme was introduced in the National Insurance Act, 1911, but there was considerable enlargement in 1920, when about 11 million workers were introduced to unemployment insurance.

Now there are two main sections: the general scheme, which covers 14,611,000 workers (July 1937), and the agricultural scheme, in which 600,000 land workers are insured.

Contributions, shared jointly by the State, employer, and worker, are; men 2*s.* 3*d.*, women 2*s.*, youths (18–21) 2*s.*, and girls (18–21) 1*s.* 9*d.* Weekly benefits are: men (21–65) 17*s.*, women 15*s.*, youths 14*s.*, and girls 12*s.*, with additional 9s. for adult dependant, and 3*s.* for each dependent child.

In the middle of 1934 the accumulated debt of the Unemployment Insurance Fund was funded at £105,780,000, to be repaid at £5 millions a year until 1971.

At the same time the Unemployment Insurance Advisory Committee, under the chairmanship of Sir William Beveridge, was appointed to advise the minister of labour on variations in the administration and allocation of the fund.

For the past three years rising employment and falling unemployment have resulted in a surplus being accumulated. At the end of 1937 this surplus amounted to £62 millions; at the end of 1938, according to Sir William Beveridge's estimate, the surplus will be about £82 millions.

The Advisory Committee makes its report on the disposal of this surplus annually. In 1937 the minister adopted the committee's suggestion to reduce from six to three days the number of 'waiting days' between the end of employment and qualification for benefit.

Towards the end of 1937 a new Unemployment Insurance Bill was drafted. This proposes to grant to the committee powers to use any part of the Fund's balance towards redeeming the debt of approximately £100 millions which still remains after the 1934 funding. The committee believe that a substantial repayment of the debt will reduce the annual debt charge of £5 millions, thus releasing money for improving other conditions of the scheme, including benefits.

It is expected that the committee will also consider, before announcing their 1938 recommendations, the evidence of the Trades Union Congress in support of increased benefits to meet the rising cost of living.

Numbers supported by the Unemployment Insurance Fund in recent years (July in each case) were: 1933, 2,508,000; 1934, 2,162,000; 1935, 1,992,000; 1936, 1,660,000; and 1937, 1,443,000.

NATIONAL PARKS may be defined as areas, generally of great scenic beauty, set aside by the governments of various countries for the benefit of the people. Many, like those in Canada and parts of Africa, are also concerned with the conservation of the national flora and fauna. (*See* WILD LIFE, CONSERVATION OF.) In Australia each State has certain reservations maintained by the State governments, to which the name national parks is popularly given, the best-known of these being Mount Buffalo Park, in Victoria. In the United States there are 142 separate areas in the national park and monument system, with a total area of 17,086,671 acres, including 26 parks, 74 monuments, two historical parks, 11 military parks, 8 battlefield sites, and the park system of Washington, D.C.

NATIONAL SOCIALISM is the political creed (*Weltanschauung*) of Adolf Hitler's National Socialist Party, and the basis since 1933 of the totalitarian state of the 'Third Reich'. It is predicated on a racialism which aims to restore Germany to the rank of a first-rate Power after the humiliations of the Versailles Treaty and after what is regarded by its advocates as the weak and corrupt 'system' of the Weimar Republic from 1919 to 1933. Its doctrines are expressed in the Twenty-five Point Programme of 1920, in Hitler's book, *Mein Kampf* (1925–26), and in his later speeches and decrees.

The Twenty-five Point Programme of 1920 demanded: (1) the union of members of the German folk into a greater Germany; (2) the equality of the German folk with other nations, and the annulment of the Versailles and St. Germain Treaties; (3) land and soil (colonies) for the nourishment and settlement of Germany's excess population; (4) German citizenship to be limited to Folk Comrades, *i.e.* persons of German blood, thereby excluding Jews; (5) non-citizens to be merely 'guests' under special laws;

(6) office-holding to be limited to citizens, and an end put to the corrupting parliamentary system; (7) provision by the State for the unemployed; (8) prohibition of all further immigration of non-Germans, and immediate expulsion of all non-Germans (*i.e.* Jews) who migrated into Germany after Aug. 2, 1914; (9) all citizens to enjoy equal rights and duties; (10) the first duty of every citizen is to be spiritually or physically productive; (11) abolition of unearned incomes, *i.e.* the 'breaking of the thraldom of interest'; (12) abolition of gains from war-profiteering; (13) nationalization of all industrial trusts; (14) generous provision for the aged; (15) profit-sharing in big business; (16) creation of a sound middle-class, and immediate communalization of big department stores and their leasing on moderate terms to small concerns; (17) agricultural reform, including the expropriation of land without compensation for public welfare purposes, the abolition of land-rent, and the prevention of all speculation in land; (18) vigorous war against all those who injure the common welfare, with death for traitors, usurers, and profiteers without regard to religion or race; (19) substitution of German Common Law for materialistic Roman Law; (20) free education for all gifted children, and early inculcation of the conception of the State; (21) care by the State for the health of the folk through protection of mothers and children, through prohibition of child labour, through development of sports, and through support of all youth athletic organizations; (22) abolition of the professional paid army and creation of a folk army; (23) war on deliberate political lies and their circulation through the press, by provisions that all editors of German newspapers must be of German blood, and that non-German papers must have the special permission of the State; (24) freedom for all religious confessions so far as they do not offend the moral feelings of the German race; the Party stands for 'positive Christianity' and opposes the Jewish-materialistic spirit; (25) the creation of a strong central government in order to realize the principle, 'the common good before the individual good' (*Gemeinnutz vor Eigennutz*). Although this programme was declared 'unalterable', a number of points have been tacitly more or less abandoned (*e.g.* points 11–13 and 15–17, virtually calling for the abolition of the rule of capitalism), and two (1 and 3) are still balked by international settlements. The rest of the programme (except to some extent points 14, 18, 23, and 24) has, however, been largely achieved. (*See* Brown Shirts; Germany; Goebbels, Josef; Göring, Herman Wilhelm; Hitler, Adolf.) (S. B. F.)

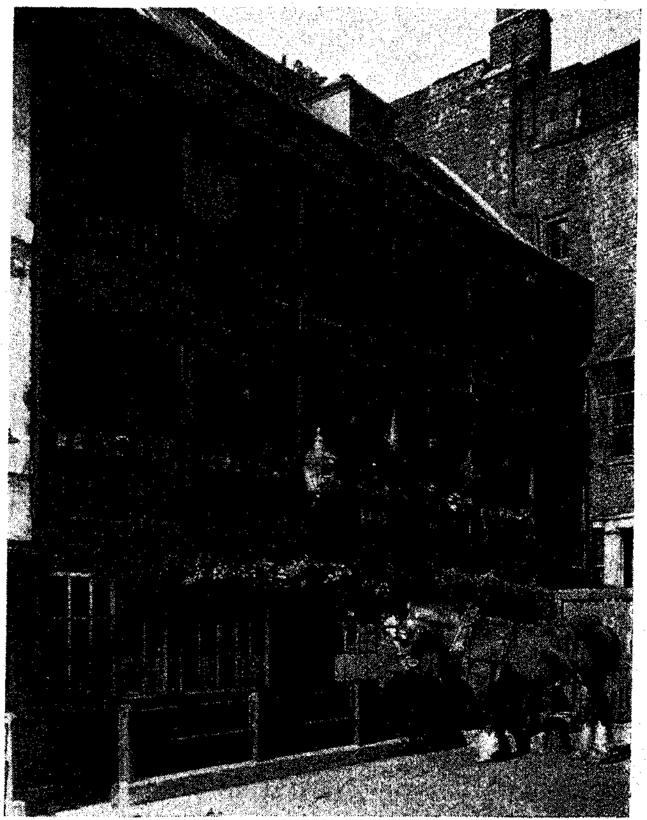
NATIONAL THEATRE. The movement for a British National Theatre dates from 1908, when the trustees of the Shakespeare Memorial Fund issued their first appeal for funds. The scheme lay dormant for many years, but early in Aug. 1937, when the trustees had rather over £150,000 in hand, they bought from the Office of Works for £75,000 an island site opposite the Victoria and Albert Museum, South Kensington, on which to erect the theatre and headquarters of the movement. This gave rise to strong opposition in certain quarters, the chief grounds for which—apart from purely aesthetic considerations—appear to have been a fear that it would harm the Vic-Wells combination (*see* Baylis, Lilian), that its funds could be expended to better advantage than upon bricks and mortar, and that, in any event, no money should be spent on land or building until an entire company of actors, producers, directors, and scene-shifters had not only been formed, but had become well established.

At the close of 1937, the trustees were on the eve of launching a nation-wide appeal for the large sum (about £350,000) necessary for the building and for the endowment of the scheme, the South Kensington site meanwhile having been cleared.

NATIONAL TRUST. The passing of the National Trust Act, 1937, was important for the National Trust for Places of Historic Interest or Natural Beauty. This Act extended the powers of the trust to hold properties as investments, using rents for trust purposes, and extended the purposes of the trust to include the preservation of buildings, etc., of national, architectural, historic, or artistic interest, the protection and augmentation of the amenities of such buildings, etc., and their surroundings, the preservation of furniture, pictures, and chattels having a similar interest, and the access to and enjoyment of such by the public.

A notable acquisition was the 'George' Inn, Southwark (*see* illustration). Built in 1677 on the site of an older inn in whose yard Shakespeare played, the 'George' is the last galleried inn in London. The ruins of Hayles Abbey, Gloucestershire, a Cistercian abbey founded in 1246, were presented in memory of Mr. and Mrs. Hugh Andrews. Other buildings acquired include the remains of a pilgrims' chapel at Dorking, Surrey, a 16th-century Flemish stone house at Tenby, Pembrokeshire, and houses with their lands in Ireland.

The Calf of Man, a 615-acre island off the Isle of Man, is to be a bird sanctuary, as is part of Groveley Estate, near Birmingham, devised in memory of Major Baldwin, while the house is to be a home for poor gentlefolk. Nature reserves added to were Wicken Fen, Cambridgeshire, and Scolt Head, Norfolk. Strips of coast in Devon, Cornwall, and Pembrokeshire, woodlands in Oxfordshire, downland and hills in Gloucestershire and Surrey, were also acquired



J. Dixon-Scott]

THE GEORGE INN, SOUTHWARK, IS THE LAST OF LONDON'S GALLERIED INNS. IT IS NOW THE PROPERTY OF THE NATIONAL TRUST. THE INN BEDROOMS ARE APPROACHED FROM THE GALLERIES SEEN IN THE PICTURE by the trust. The Scottish National Trust has acquired the Pass of Glencoe. (*See* also ANCIENT MONUMENTS.)

BIBLIOGRAPHY.—J. Dixon Scott, *England under Trust* (London, 1937); Clough Williams-Ellis, *Britain and the Beast* (London, 1937). (V. R.)

NATIONAL WEALTH: *see* WEALTH AND INCOME, DISTRIBUTION OF.

NATURAL HISTORY MUSEUMS. In 1937, many signs pointed to a gradual transformation of natural history museums, by which they may become fully accredited parts of the educational system in every civilized country. They always have been adjuncts to general education and always have had a basic, vital relation to scientific research; but it is only recently that they have reached out to a broad public which by quick response has stimulated them to greater effort. The change began scarcely more than 30 years ago with the improved techniques centring around the so-called 'habit group'. With its combination of art and nature in exquisite reproductions of both animals and plants, this introduced a new feature which by sheer beauty attracted a large public and larger financial support. The habitat group has come to stay, but its heyday is passing, and not improbably it will prove to be a link between the museum of the past, which was mainly objective, and the one of the future, which will doubtless be much more subjective.

The success of the habitat group has been due, not only to its colourful art, but also to its subtle didacticism, to the obvious or implied story it tells. It is, nevertheless, largely objective and essentially imitative. Therefore, it only partly fulfils the modern demand for thought-provoking or definitely instructive exhibits. Entertainment is still a great function of museums, but the tendency is to combine it with service. This is seen, not only in organized work with schools and colleges, but also in special teaching exhibits, and in general public relations ranging from information services to national radio broadcasts.

The spread and growth of museums has continued. New museums are being established in small or medium-sized communities, and old ones are being expanded everywhere. Museums to meet special conditions also have multiplied. Such are the 'trailside' museums and the park museums. A highly specialized museum is the spelaeological museum planned in Cragdale, Settle, Yorkshire. In State and national parks there are now more than 50 special museums in various parts of the United States. A unique and stupendous undertaking under museum auspices is the Dinosaur national monument in Utah, where the remains of huge extinct reptiles are to be shown *in situ*.

In the British Empire, museums have been greatly stimulated by the Carnegie United Kingdom Trustees administering funds provided by the Carnegie Corporation. Beginning in 1931, they have not only fostered study of museum methods throughout the world, but also have judiciously allotted grants in relatively small amounts for many specific purposes. Such grants have put new life into many a museum, have awakened it to new possibilities, and have placed it in a new light within its community.

The growth of museums in Soviet Russia has been phenomenal and but little known to the rest of the world. According to authoritative report there are now at least 738 Russian museums as against only 115 before the revolution. The number in Moscow has increased from 47 to 129. Not all are natural history museums, but those wholly or partly devoted to natural science constitute 51 per cent. of the total as compared to a former 8·8 per cent. Many are so-called museums for regional study, closely connected with the schools, and definitely anti-religious in outlook.

In changing from a somewhat static but assured existence to a dynamic one with large future potentialities, museums are encountering many problems. Co-operative movements and numerous museums associations are attacking these problems. At the meeting of the British Museums Association in 1937 the director of the American Association was present to deliver an address and offer exchange of ideas. An exhaustive treatise on museum methods came from Germany, and the Scottish Federation of Museums held its first meeting in Oct. 1937. Japan has a flourishing association, and there is even one in China which entered its second year in 1937.

Museums have been quick to utilize the radio, especially those with large staffs able to speak authoritatively and to command public attention. In London, the Natural History museum has conducted programmes in co-operation with the British Broadcasting Corporation and the Central Council on school broadcasting. The American museum of New York and the Smithsonian institution of Washington have done much broadcasting. The former recently had a series called 'This Wonderful World', offering prizes and featuring questions and answers on natural history subjects. The Field museum of Chicago, for several months during the summer of 1937, conducted weekly broadcasts in which museum activities, especially expeditions, were dramatized. (W. H. O.)

NAURU: *see* PACIFIC ISLANDS, MANDATED.

NAVAL CONFERENCES: *see* LONDON NAVAL CONFERENCES.

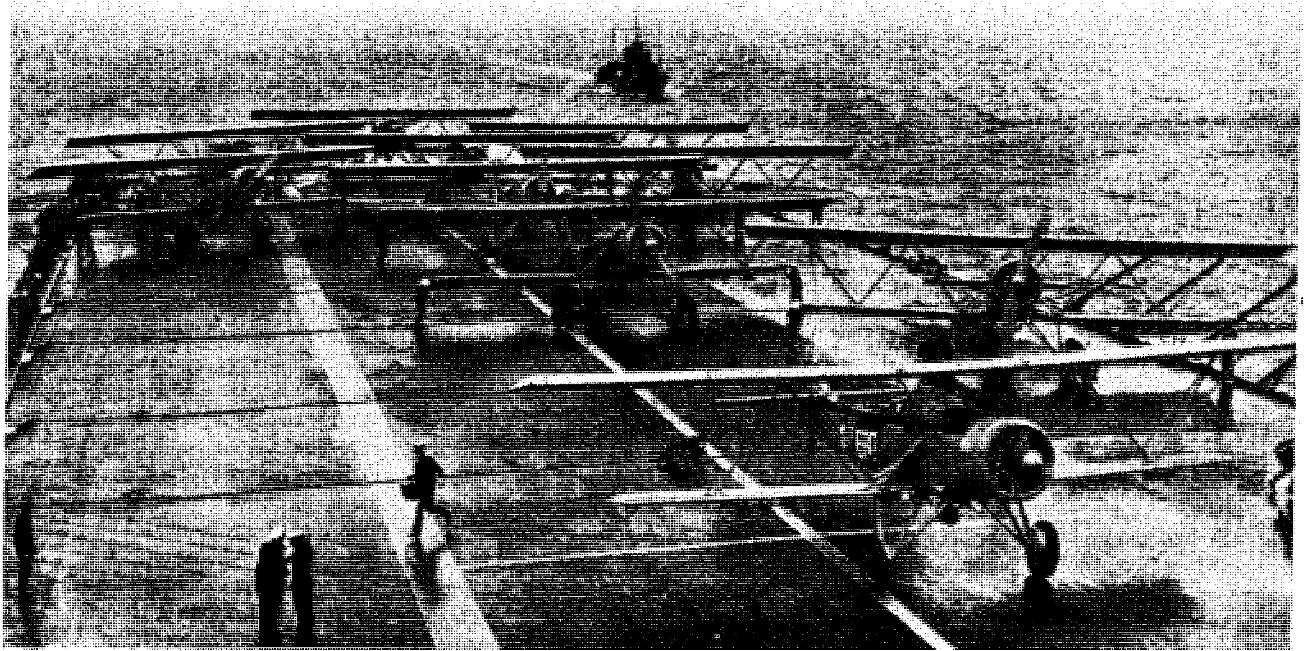
NAVIES OF THE WORLD. At the end of 1937 every navy of importance in the world was taking measures to increase its strength. Though this applies more particularly to the seven principal Powers—the British Empire, the United States of America, Japan, France, Italy, Germany, and Russia—it holds good also for most of the minor ones.

All seven of the above Powers are building new capital ships, a fact which goes far to discount exaggerated claims by air enthusiasts as to the ability of air forces to influence naval strategy. So far as details of the designs of these new capital ships have been published, certain features appear to be common to all; this is largely owing to the standard displacement of 35,000 tons having been more or less generally adopted. On this displacement, possibilities in the way of novelty in design are strictly limited, if adequate protection, reasonably high speed, and good sea-keeping qualities are to be obtained.

The aircraft carrier, whose relative vulnerability caused some critics to assume that its day was done, figures in the building programmes of all the above Powers with the exception of Italy; and it would not be surprising if the Italian Naval Staff were to arrive at the conclusion that aircraft carriers will be needed in the future.

Torpedo tubes as part of the armament of capital ships, or of heavy cruisers, have fallen out of favour. Not only are they excluded from all the designs of new capital ships so far published, but they are being removed from many of the capital ships and heavy cruisers that have been taken in hand for refit or reconstruction.

Increased deck protection against plunging fire or air bombs is a feature found in all the new designs of capital ships and heavy cruisers, in combination with enhanced anti-aircraft armament and the addition of aircraft and catapults to their equipment. With higher steam pres-



Wide World Photos]

AIRCRAFT FORMED UP ON THE DECK OF THE BRITISH AIRCRAFT CARRIER 'COURAGEOUS', DURING AERIAL MANŒUVRES. THE ESCORTING DESTROYER 'CRUSADER' IS SEEN IN THE BACKGROUND

sures and boilers of improved design, space and weight have been made available for these additions, which would have been difficult to provide otherwise.

Efforts to abolish the submarine as a weapon of war have been utterly fruitless, and more submarines are now under construction than ever before. Another type of warship which is being built in large numbers is the motor torpedo boat, the value of which for coastal operations was proved in 1918-19, though for many years the type was neglected in nearly every navy. One of its attractions is that it can be built quickly and cheaply.

Destroyers have altered less than any category of warship since the Armistice; but even here, increased steam pressures and modified boiler design have enabled certain improvements to be made. Of late, there has been a tendency in several navies to reduce the number of funnels to one; instances of this will be found in the British, United States, Italian, and Polish fleets.

British Naval Strength.—During the period covered by the currency of the Washington Treaty of 1922 and the London Treaty of 1930, British naval strength declined sharply, both in material and personnel. This fact was not fully realized by the nation at large until it was brought home to the public by the Abyssinian crisis of 1935. Since that date large and increasing programmes have been introduced each year, a course rendered possible by the automatic termination of the two treaties already referred to at the end of 1936.

At the end of 1937 the British Fleet comprised the following warships: 12 battleships; 3 battle cruisers; 15 heavy cruisers, mounting 8-in. guns; 42 cruisers with 6-in. guns; 2 anti-aircraft cruisers; 1 cruiser-minelayer; 5 aircraft carriers; 162 destroyers; 52 submarines; 33 escort vessels; 33 minesweepers; 6 patrol vessels; 3 aircraft tenders; 2 netlayers; 18 river gunboats; 5 coastal minelayers; 10 motor torpedo boats; and 3 monitors. In addition, there were under construction or authorized: 5 battleships; 17 cruisers; 5 aircraft carriers; 40 destroyers; 18 submarines; 4 escort vessels; 7 minesweepers; 5 patrol vessels; 3 river gunboats; 2 coastal minelayers; and 13 motor torpedo boats. It will be appreciated from this that a very large expansion of material strength is in progress, though the more important units will not be ready until 1940-41. To man the additional tonnage under construction, corresponding increase is being effected in the numbers of officers and men, largely by entering cadets and boys, but also by direct entry of officers from the Royal Naval Reserve and of men from civil life. The 1937 Navy Estimates provided for a total personnel of 112,000, as compared with the low-water mark of 90,300 touched in 1933. At the outbreak of the World War in 1914 this total was 151,000.

Dominion Navies.—A number of the British Dominions overseas maintain local naval forces. These include the Royal Indian Navy, with 5 escort vessels, a patrol vessel, and some minor craft; the Royal Australian Navy, with 4 cruisers, a flotilla leader, 4 destroyers, 2 escort vessels, a seaplane carrier, and 4 other ships; and the Royal Canadian Navy, with 4 destroyers, and 4 vessels of less importance. For comparative purposes ships of these navies have been incorporated in the total strength of the British Empire's fleet, summarized in the preceding paragraph.

The Dominion of New Zealand maintains two or three small craft for training its naval personnel. Two cruisers are lent to the Dominion from the Royal Navy, in addition to a couple of escort vessels stationed in New Zealand waters.

American Naval Strength.—After a similarly quiet period, the United States Navy is also beginning to expand again. Its strength at the end of 1937 included: 15 battleships; 3 aircraft carriers; 17 cruisers with 8-in. guns; 12 cruisers with 6-in. guns; 196 destroyers; 84 submarines; 11 gunboats; 33 patrol vessels; 3 aircraft tenders; 10 minelayers; and 43 minesweepers. Under construction, or to be begun early in 1938, were: 4 battleships; 3 aircraft carriers; 8 cruisers; 38 destroyers; 22 submarines; 1 aircraft tender; and 2 motor torpedo boats, the first to be built for the U.S. Navy. The total personnel amounts to 119,992.

Japan.—Third in strength of the great naval Powers, Japan also enjoys a unique geographical position, which adds greatly to the strategical value of her fleet. Its strength at the end of 1937 included: 9 battleships, together with a demilitarized battleship which it has been proposed to rearm; 5 aircraft carriers; 12 cruisers with 8-in. guns; 23 cruisers with 6-in. guns; 5 old cruisers rated as coast defence ships; 105 destroyers; 12 torpedo boats; 3 submarine chasers; 60 submarines; 3 aircraft tenders; 11 minelayers, and 9 gunboats. Full information as to ships under construction in Japan is not available, but it is believed that three battleships, armed with 16-in. guns, were put in hand at the end of 1937. Otherwise there are known to be building: 1 aircraft carrier; 2 cruisers; 10 destroyers; 8 torpedo boats; 3 submarine chasers; 2 submarines; and 2 aircraft tenders. Probably the actual numbers under construction are greater than these figures. The total personnel amounts to 107,000.

France.—At the end of the World War French naval strength had declined appreciably compared with that of most of her allies. But of late years determined efforts have been made to regain lost ground, and the French Navy now includes: 6 battleships; 1 aircraft carrier; 7 cruisers with 8-in. guns; 12 cruisers with guns of lighter calibre; 60 destroyers, many of which are of between 2,000 and 3,000 tons displacement, virtually small cruisers, in fact; 11 torpedo boats; 75 submarines; 2 minelayers; 1 net-layer; 1 aircraft tender; 44 escort and patrol vessels; 4 minesweepers; 13 submarine chasers; 9 river gunboats. Under construction or to be laid down shortly are: 3 battleships; 2 cruisers; 16 destroyers; 6 torpedo boats; 16 submarines; 4 aircraft tenders; 19 escort and patrol vessels; 18 submarine chasers; and 1 river gunboat. Of late the rate of construction has slowed down considerably, and some ships have been completed long after their due dates. The total personnel is 69,500.

Italy.—With the Fascist régime the Royal Italian Navy has undergone a combined process of expansion and renovation. It now includes: 4 battleships of pre-war construction, 2 of which have been completely rebuilt, while the other 2 are being similarly dealt with; 7 cruisers mounting 8-in. guns; 15 cruisers with lighter weapons; 1 obsolete cruiser used for training purposes; 64 destroyers; 60 torpedo boats; 86 submarines; about 100 motor torpedo boats; 1 escort vessel; 1 aircraft tender; 15 minelayers; 38 minesweepers; 14 gunboats; and 5 monitors. There are under construction: 4 battleships of 35,000 tons; 24 destroyers; 16 torpedo boats; 20 motor torpedo boats; and 20 submarines. More submarines and small craft will be begun in 1938. It will be observed that the tendency is to build torpedo craft and submarines in large numbers, and it will not be long before Italy leads the world in the number of these vessels, though at the moment Russia probably holds that distinction. The personnel numbers 67,803.

Germany.—Since Germany decided to depart from the restrictions imposed by the Treaty of Versailles, the expansion of her Navy has been spectacular in its rapidity. It now includes the following warships, almost all built within the past few years: 3 armoured ships, the so-called 'pocket battleships', which are actually big armoured cruisers of an exceptionally powerful type; 6 cruisers; 8 destroyers; 18 torpedo boats; 14 motor torpedo boats; 36 submarines; 2 gunnery training ships; 10 patrol vessels; and 23 mine-sweepers. Either under construction or to be laid down early in 1938 are: 5 battleships; 2 aircraft carriers; 3 cruisers armed with 8-in. guns; 4 cruisers with 5·9-in. guns; 14 destroyers; 18 torpedo boats; 6 motor torpedo boats; 25 submarines; and 24 minesweepers. Equally rapid has been the increase in personnel, which in 1937 totalled 46,600. A very large proportion of this total must still be under training.

Russia.—Exact information about the Russian Navy is very hard to obtain, but the figures given here are as trustworthy as can be procured. The strength in completed ships is believed to be: 3 battleships, of an old type; 3 modern cruisers and 2 old ones used for training; 1 cruiser-minelayer; 20 destroyers; 18 torpedo boats; 130 motor torpedo boats; 113 submarines; and a large but somewhat uncertain number of small minelayers and minesweepers. Under construction are: an aircraft carrier, at least 2 cruisers, 5 or more big destroyers, about 36 submarines, and a number of motor torpedo boats. In 1938 it is intended to start the construction of one or more battleships. The total personnel is not known, but was reported some time ago at 23,600; it has since been increased.

Reasons for Increases.—It may be asked, why are all the great nations increasing their naval armaments? Except in the cases of France and Germany, and Germany and Russia, it is not a matter of direct competition. Nowadays no thinking person in either Britain or the United States seriously regards the other country in the light of a possible opponent, since the ideals of both are similar, and it is hard to envisage any disagreement serious enough to bring armaments into question. But in nearly every country there is a growing sense of insecurity owing to the troubled state of world politics, which has led to a universal demand for stronger defences.

That this is so is proved by the attitude of the smaller countries. The Netherlands, a peace-loving nation which is not easily stirred, has embarked on its biggest naval programme for many years. Its existing fleet comprises: 3 cruisers; 2 old coast defence ships; 8 destroyers; a dozen old torpedo boats; 22 submarines; 3 escort vessels; 10 minelayers; and 16 minesweepers. There are under construction, or to be built immediately: 2 cruisers; 4 destroyers; 9 submarines; a gunnery training ship; 3 escort vessels; a minelayer; and a number of motor torpedo boats. Concern is felt for the safety of the vast Dutch possessions in the East Indies, which, it is felt, are but inadequately protected by the existing fleet.

The Scandinavian countries are fully as peace-loving as the Netherlands, and are not easily disturbed by wars and rumours of wars. But the Swedish commander-in-chief has recommended quite a formidable programme to Parliament, for the construction over the years 1938-43 of 3 8,000-ton armoured cruisers; 4 torpedo boats; 3 submarines with a parent ship; and 12 motor torpedo boats. This is a big increase on the present fleet of 2 cruisers; 8 coast defence ships; 14 destroyers; 16 submarines; 6 minesweepers; and 7 motor torpedo boats. It is possibly the growing strength of the German and Russian Navies that Sweden fears, but general uneasiness at the world situation is probably an equally contributory cause.

Norway has not yet introduced any fresh programme, but it is only a question of time before the increasing number of advocates of rearmament in that country will find their demand met. At present the fleet includes: 4 coast defence ironclads; 21 torpedo boats; 9 submarines; and 4 mine-layers, the majority being old ships. Four torpedo boats and two minesweepers are building or authorized.

Denmark is at much the same stage as Norway. To a fleet of 2 coast defence ships, 20 torpedo boats, and 8 submarines there will soon be added a minelayer; 3 submarines; and 3 minesweepers.

As a new country, Finland has a small but modern fleet, which comprises: 2 coast defence ships; 5 submarines; and 4 gunboats, besides smaller craft, such as motor torpedo boats and coastal minesweepers. A new construction programme is at present under consideration.

Poland, another new country, is steadily building up a navy of considerable importance. It now includes: 4 destroyers; 3 submarines; 5 torpedo boats; 2 gunboats; and 4 minesweepers. A minelayer and two submarines are building, and it has been proposed that an extensive programme, to include capital ships and cruisers, shall be put in hand in the near future.

The Estonian navy is small but quite efficient. It includes: 2 submarines; a torpedo boat; 4 minelayers; and a number of smaller craft. It is intended to add a flotilla of motor torpedo boats to the fleet next year. Latvia's force of 2 submarines, 2 minesweepers, and a gunboat is still smaller, while Lithuania has only a single patrol vessel. Both these countries are discussing extensions of their naval forces.

In the south of Europe, the Spanish navy is divided into two opposing sections. Disregarding this, there are: 7 cruisers; an old battleship which is at present completely disabled; 15 destroyers; 11 torpedo boats; 11 submarines; 2 minelayers; 5 gunboats; and many smaller vessels. Two destroyers, three submarines, and four minelayers are under construction.

Portugal has a small but highly efficient fleet, which has been modernized in recent years. There are: 6 destroyers; 8 escort vessels; 2 torpedo boats; 3 submarines; and 3 gunboats. A new programme is being framed in 1938 with the help of British naval advice.

Greece possesses an old armoured cruiser; a cruiser-minelayer; 8 destroyers; 13 torpedo boats; 6 submarines; 4 small minelayers; and 2 motor torpedo boats. Two destroyers are under construction in British yards, and 10 more destroyers and 2 submarines are to be begun within the next two or three years.

Turkey's biggest ship is still the *Yavuz*, formerly the German battle cruiser *Goeben*, which was modernized a few years ago. There are: 4 destroyers; 5 submarines; 2 old cruisers; 11 motor torpedo boats; and sundry vessels of less importance. Under construction are: 4 submarines, and a number of motor torpedo boats, while 2 cruisers and 4 destroyers are projected.

Rumania has 4 destroyers, a submarine, 3 old torpedo boats, and some minor war vessels. Additions to this force are at present under consideration. Bulgaria has nothing but 4 small torpedo boats of an obsolete type.

The Royal Yugoslav navy is a growing force, with the flotilla leader *Dubrovnik* as its flagship. There are: 4 submarines; 6 torpedo boats; 10 motor torpedo boats; an old cruiser; an aircraft tender; and 11 minelayers, while 3 destroyers are under construction.

South America.—In South America, after a long period of quiescence, there is a general disposition to bring fleets up to date in conformity with the world impulse already noticed.

The Argentine navy at present comprises: two battleships; 2 cruisers; 4 coast defence ships; 9 destroyers; 3 submarines; and 10 patrol vessels. Under construction in England are a cruiser and 7 destroyers, while 7 patrol vessels are being built in Argentine yards—quite a new departure.

Brazil is also taking steps to increase her navy. To the existing force, which includes 2 battleships, 2 cruisers, 8 destroyers, and 4 submarines, there are being added 9 destroyers, 6 of which will be built in England, and 6 minelayers which, like the other 3 ships, are under construction in Brazil. Both battleships are being reconstructed.

Chile, which in the efficiency of its fleet has always taken a very high place, recently obtained tenders for the construction of two new cruisers. Otherwise her navy consists of a battleship, the *Almirante Latorre*, which fought in the British Grand Fleet during the World War as H.M.S. *Canada*; 3 cruisers, a coast defence ship, 8 destroyers, and 9 submarines. Financial conditions alone have hindered the earlier renewal of the Chilean fleet.

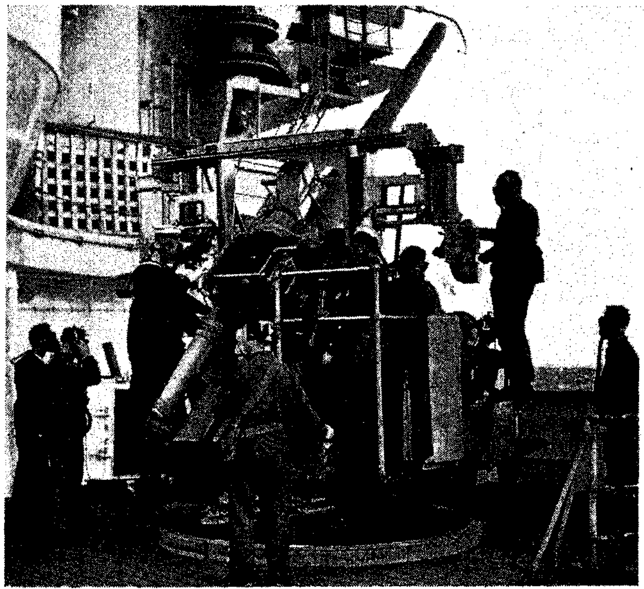
Peru possesses 2 cruisers, 2 destroyers, 4 submarines, and a torpedo boat. Frequent changes of government have hitherto prevented new programmes of construction from getting beyond the paper stage. In the case of Ecuador, a similar situation prevails, except that the whole fleet at the moment consists of the gunboat *Presidente Alfaro*.

Colombia has recently built up a small but efficient navy with the aid of British officers and instructors, there being 2 destroyers, a minesweeper, and a number of gunboats and patrol vessels. Venezuela possesses half-a-dozen gunboats; Uruguay, 3 patrol vessels, and several other small craft; and Paraguay, 4 river gunboats.

Farther north, Mexico can dispose of 5 modern escort vessels and 2 old ones, a coast defence ship, 10 gunboats, and 4 patrol vessels. Cuba has 2 escort vessels, recently rebuilt; 5 gunboats, and 7 patrol vessels. Haiti has 2 little patrol vessels.

One of the outstanding features of these South American, Central American, and West Indian navies is that, with the exception of Argentina and Brazil—and those to a limited extent—none can build ships at home, so that orders have to be placed abroad.

This also applies to three Eastern navies, the existence of which is sometimes almost forgotten. Two have built up new fleets under the tutelage of Japan, and the third is doing the same under the guidance of Italy.



Charles E. Brown]

ANTI-AIRCRAFT GUN IN ACTION ON BOARD H.M.S. 'COURAGEOUS'

The navy of Manchukuo, though mainly a river force, includes 15 gunboats, all but 5 of which are modern vessels built in Japan, as are 6 patrol vessels which are also included in the fleet. A destroyer and several other vessels of less importance exist, though full particulars of these are not available.

Though little advertised, the recent rapid expansion of the Royal Siamese navy is a remarkable feature for which no obvious explanation is forthcoming. It has more than trebled its strength in a little over two years, and now comprises: 2 coast defence ships built and 2 building; a destroyer; 18 torpedo boats and 4 submarines; 2 escort vessels; 3 gunboats built and 2 building; 2 or 3 minelayers; and 8 motor torpedo boats. With the exception of the minelayers and 10 torpedo boats, which were built in Italy, the whole of the new construction has been undertaken in Japan. Actually, a further programme is believed to have been approved, and probably a number of additional ships, not mentioned above, have already been begun.

Iran is the third country to develop, under foreign inspiration, a navy from next to nothing. In place of one or two old vessels of no fighting value, the Imperial Iranian navy now includes: 7 gunboats, half a dozen motor torpedo boats, and one or two ancillary vessels. Personnel for these ships, as in the case of Siam and Manchukuo, has been trained under officers from the country supplying the ships—in this case, Italy.

Iraq, the neighbour of Iran, has begun to build up a little navy, its nucleus having been formed with 4 patrol vessels, a yacht, and a tug, all British built.

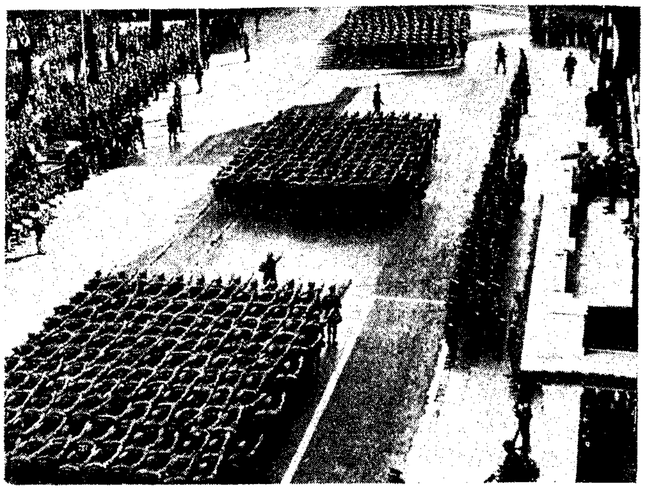
Of the Chinese navy it is difficult to say anything at the moment, since it has suffered heavily from the onslaught of Japan. Before hostilities began, its force was considerable, including: 8 cruisers, an escort vessel, over 20 gunboats, 6 old torpedo boats and 10 of the modern motor type, 16 river gunboats and patrol vessels, and a couple of small seaplane carriers. Several of these ships have been sunk, or, in the case of a comparatively new cruiser, the *Ning Hai*, taken possession of by the Japanese forces. This is no reflection on the bravery or efficiency of the Chinese personnel, which was completely overwhelmed by superior strength.

Until the issue of the present struggle in the Far East is finally determined, it is hard to forecast the future of the Chinese navy; but if an independent Chinese government survives, it may be taken as a certainty that a new fleet will in due course be provided.

There are of course several countries whose naval forces are either non-existent at present or of too small importance to be worth counting in world affairs. Czechoslovakia, Austria, and Hungary all maintain river forces with semi-military personnel, which are navies in a sense. In the case of Czechoslovakia the strength of this force has been more than doubled recently, a significant commentary on the unsettled state of Central Europe at the present time. Austria actually went to the length of disbanding its force and selling the ships some years ago, but has since reconsidered matters and reconstituted it with fresh craft.

That for some years to come the development of the world's navies will provide a steady source of income for shipyards and a subject for discussion everywhere seems to be certain. That it will lead to another World War by no means follows, for it is a characteristic of naval armaments that, provided the preponderance of strength lies in the hands of peace-loving countries, they can be used to the greatest advantage as a means to restrain aggression. (F. E. McM.)

NAZIS, a popular and convenient but slightly derogatory abbreviation for members of the National Socialist Party led by Adolf Hitler since 1920. According to some writers, it arose during the early days of the party as a derisive nickname from a local Bavarian slang expression meaning mountain country-bumpkin or 'hill-billy'. More probably it arose from the German pronunciation of the first two syllables (*Nati*) of its long official name—*Nationalsozialistische Deutsche Arbeiterpartei* (National Socialist German Workers' Party), just as the members of the Social Democratic party used to be known as *Socis*. The official abbreviation, commonly used by German writers is 'NSDAP', these being the initial letters of the five combined words of its full name. (*See* Brown Shirts; Danzig; Germany; National Socialism.) (S. B. F.)



Sport & General]

THE OPENING OF THE NAZI PARTY CONGRESS AT NUREMBERG, 1937. THE MARCH PAST HITLER

NEBRASKA: *see* United States of America.

NEGRIN, JUAN (1889–), Spanish biologist and politician, finance minister since Oct. 1936 and, since May 1937, premier of 'Government' Spain; a moderate Socialist, closely associated with the party leader, Señor Indalecio Prieto. Señor Negrin's 'Popular Front' government, including 3 Socialists, 2 Communists, and 4 members of other 'Left' parties, was formed on May 17, after the resignation of that of Señor Caballero (*q.v.*) on May 15, to unify the direction of the war and represent so far as possible all the parties of the Left; the Anarcho-Syndicalist 'C.N.T.', however, refused to take part in it. On Oct. 1–2, the Cortes, meeting at Valencia, passed a vote of confidence in Dr. Negrin, adjourning indefinitely immediately afterwards; at the end of the month the premier moved the government to Barcelona, where, on Nov. 17, he made an important speech denying the rumours that an armistice or

Wide World Photos]

DR. JUAN NEGRIN

agreement between the opposing forces was contemplated, and expressing his government's intention to consider no termination of the war which was not brought about by the unconditional submission of the insurgents.

NEHRU, JAWAHARLAL (1890—), Indian Nationalist and Socialist leader, son of Motilal Nehru; educated at Harrow and Cambridge; called to the Bar in London, returning to India shortly afterwards and becoming identified with the National Congress Party, of which he became leader. After re-election to the presidency of the Party on Dec. 6, 1936, Pandit Nehru, at the public session of its Congress on Dec. 27, explained its policy, and expressed his opinion that Socialism was the only remedy for India's ills. The Party, he said, was entering the new legislatures not to co-operate with British imperialism, but to combat the Government of India Act and to endeavour to end it. After the elections in Jan. and Feb. 1937, he reiterated this policy at a Party Convention on March 19, saying that 'this Constitution must go, lock, stock, and barrel'. He repeated his condemnation of the Government of India Act on March 27 and April 9, urging steadfastness in the Congress Party's policy of refusing to take office in the provinces where it had obtained a majority; but in spite of his pleas the Party on July 7 decided to accept office 'in order to further the policy of combating the new Act on the one hand and prosecuting a constructive programme on the other'. On July 20, in a statement to the Indian people, Nehru appealed for their co-operation with the Congress, and exhorted them all to wear khadi (*i.e.* homespun cotton cloth) and display the national (*i.e.* Congressional) flag.

Wide World Photos]

JAWAHARLAL NEHRU

NEJD: *see* ARABIA.

NEPAL. A long, narrow tract of Himalayan country, lying between India and Tibet. Its area is about 54,000sq.m., and its population under 6 millions. The capital is Khatmandu (population about 80,000), where a British resident is stationed. The titular king is Maharaja Bir Bikram Jang; but by ancient usage the *de facto* ruler is the prime minister and commander-in-chief, Sir Joodha Shamsher Jang. The State has complete internal and external independence, but maintains close and friendly association with the government of India, supplying the Indian army with the recruits for its fine Gurkha regiments.

Early Hindu invasions diluted the original Mongolian stock: Hinduism is practised as well as Buddhism. Cultivation is sparse except in the valleys; and there is much primeval forest, where the wild elephant is still found, among the foot-hills. Rice, however, is freely grown in the part of Nepal which overflows into the plains of India. The Indian railway system runs up to the Nepal border; but Nepal's traditional policy of exclusiveness has prevented it from penetrating farther. (ME.)

NETHERLANDS (Dutch *Koninkrijk der Nederlanden*; Fr. *Pays-Bas*; English *Holland*), kingdom of north-west Europe, member of the League of Nations. Bounded N. by the North Sea, E. by Germany, S. by Belgium, and W. by the North Sea. Capital (political), The Hague. Ruler, Queen Wilhelmina (born, 1880; succeeded, 1890; crowned, 1898). National flag, red, white, and blue, in equal horizontal stripes.

Area and Population.—The area is 12,692 sq. m. (exclusive of inland waters, 511), divided into 11 provinces, thus:

Province	Area (sq. m.)	Population (1935 estimate)	Density (per sq. m. 1935)
BRABANT, NORTH	1,921	975,125	507·6
DRENTE . .	1,029	238,414	231·7
FRIESLAND . .	1,286	415,178	322·8
GRONINGEN .	886	413,232	466·4
GUELDERS . .	1,940	891,250	459·4
HOLLAND, NORTH	1,137	1,614,424	1,419·9
HOLLAND, SOUTH	1,130	2,078,704	1,839·6
LIMBURG . .	846	589,473	696·8
OVERYSEL . .	1,301	553,480	425·4
UTRECHT . .	526	452,221	859·7
ZEALAND . .	690	253,005	366·7

The census population (1930) was 7,935,565 (1935 figures: 8,474,506—4,220,674 males, 4,253,832 females). There is complete religious liberty, with State allowances for the churches: Dutch Reformed and other Protestants, closely followed in membership by Roman Catholics, and at longer intervals by Jews and Jansenites.

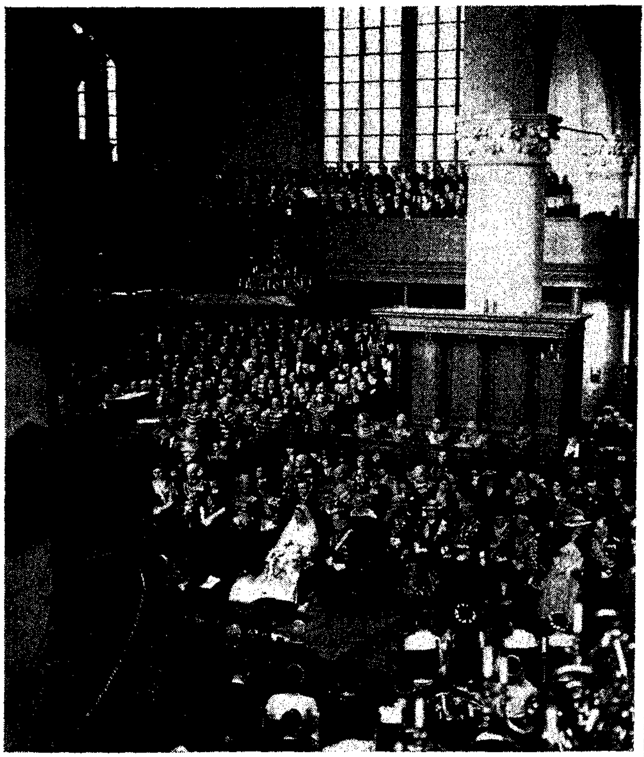
Primary education is compulsory. In 1935–36, 7,953 elementary schools (public and private) had 1,232,452 pupils; 430 secondary schools, 71,935, with nearly twice that number in technical schools. In the public universities—Leiden, Groningen, Utrecht, and Amsterdam (municipal)—there were 8,630 students; the two voluntary universities had more than 1,000 more.

Leading Cities.—Amsterdam, the commercial capital (781,645), and Rotterdam (595,448) both exceeded The Hague (482,397); Utrecht, Haarlem, Groningen, and Eindhoven exceeded 100,000, and 12 others 50,000 (1936).

History.—Executive power is solely the Sovereign's; legislative responsibility rests jointly upon the Sovereign and parliament (states-general). A state council of 14, appointed by the Sovereign, is, however, consulted on all legislative and many executive matters. The ministry consists of a president and nine other members. The second chamber has 100 deputies, elected for four years by universal adult suffrage (over 25) and proportional representation (1937 election: Catholics, 31; Social Democrats, 23; Anti-Revolutionists, 17; Christian Historicals, 8; Liberal Democrats, 6; other parties, 15), the first chamber has 50 members, elected by the provinces for six years, half retiring every three years. The 1937 elections disappointed the National Socialists and strengthened the position of Dr. Hendrikus Colijn (born, 1869; prime minister, 1925–26 and since 1933).

On Jan. 7, Princess Juliana, only child of Queen Wilhelmina, was married, at The Hague, to Prince Bernhard von Lippe-Biesterfeld, the Duke of Kent attending. In June the Princess announced on the radio her expectation of the birth of a child. The marriage occasioned a revision in the Constitution, to provide an income for Prince Bernhard; that of Queen Wilhelmina was reduced.

Germany's guarantee of neutrality being rejected (February), defence steps were reconsidered. The parties to the Oslo Convention (1930) assembled at The Hague (March; *see* also NORWAY; BRUSSELS) and signed a new



Keystone]
THE WEDDING OF PRINCESS JULIANA OF THE NETHERLANDS AND PRINCE BERNHARD OF LIPPE-BIESTERFELD, JAN. 1937

pact there (May) ; later, Holland's Oslo concessions were extended to Great Britain and Germany.

Trade and Communications.—Over two-thirds of the land was under cultivation in 1935 (a slight increase), pasturage leading (there were nearly 2¾ million cattle and nearly 1¾ million pigs ; butter showed an increase, cheese a drop) ; leading crops are rye and potatoes. Natural resources include coal and salt (one mine). The sea-fisheries are of moderate value.

The centres of population are devoted to trade rather than manufactures, though the output of artificial silk stands seventh in the world. The following figures for exports and imports (1936) include goods in transit for other countries, notably Germany : 772,615,000 guilders (£85,846,000) and 1,016,524,000 guilders (£112,947,000) respectively ; these figures showed rises after drops, and those for half 1937 showed further rises. The same is true of Anglo-Dutch trade, with rises of 6 per cent. in exports from, and 8·9 per cent. in imports to, Great Britain (bacon, condensed milk, bulbs, and paper leading).

At Dec. 1935, the mercantile marine had 823 ships (3,285,772 cubic metres). In inland transport the 4,750 miles of rivers and canals play an important part. The use of railways and tramways tends to decline in the face of motor-bus competition. The development of telegraphs, telephones, and radiographs has been normal. Subsidized air services (including the Amsterdam-Batavia line) place Holland fifth in the world in air transport, with (1937) 15,800 miles of route, 110,000 passengers, and 1,617 tons of goods.

Finance and Banking.—The common unit of currency is the (silver) guilder, or florin (at par, 12·11 guilders = £1). The 1938 budget showed an income of 689,950,275 guilders (£76,661,000 ; increase, £6,645,000), about one-quarter derived from direct taxation ; and expenditure of 703,195,931 guilders (£78,133,000 ; decrease, £9,241,000) ; in view of recent trends the paper deficit was expected to disappear. Direct taxation averages 17 guilders per head over the entire population. Total public debt (Jan. 1937) : 2,773,265,000 guilders (redemption, 39,771,000 guilders).

The Netherlands Bank, though private, alone issues bank-notes (two-fifths covered). Position at March 1, 1937 :

Assets		Liabilities	
	Guilders		Guilders
Gold and Silver .	897,271,000	Notes in circulation .	814,257,000
Discounts and Advances .	199,800,000	Deposits .	299,994,000
Totals .	1,097,071,000	Totals .	1,114,251,000

In 1935 the State Postal and other savings banks showed 3,481,714 depositors ; average deposit account, 60 guilders.

Defence Forces.—In the (home) army there were (1936) 1,568 officers and 15,769 other ranks. The (home) fleet had two coast defence ships and 22 other effective vessels (11 submarines), the East Indies fleet, one coast defence ship, three cruisers, eight destroyers, and 15 submarines ; one cruiser is building. The former maximum annual contingent of 19,500 men (voluntary and conscript) has been nearly doubled, and the period of service raised from 8½ to 11 months. The State police had, in the cavalry (frontier guards) some 22 officers and 1,180 men, in the field-constabulary, 1,340, all ranks. Defence budget (1937) : 84,807,998 guilders.

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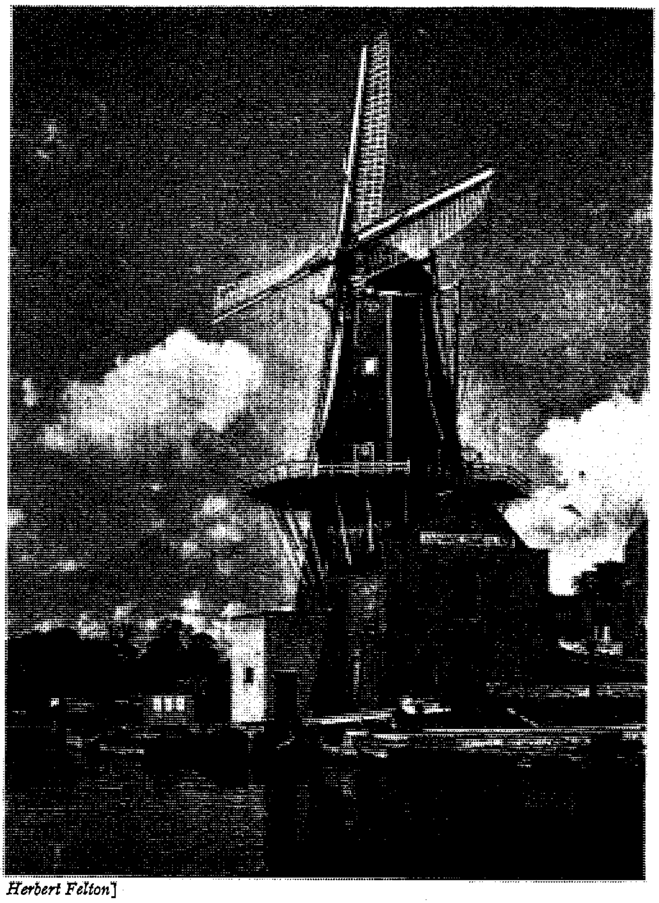

Herbert Felton]
HAARLEM

NETHERLANDS INDIES, the largest colonial possession of the Netherlands, consists of a huge archipelago, with several large islands, Java, Sumatra, Celebes, parts of Borneo and New Guinea, and many smaller ones, lying along the Equator from 6° north latitude to 10° south latitude, south of the Philippines, south and east of the Malay Peninsula, and north of Australia. Capital, Batavia; governor-general, Jonkheer Dr. A. W. L. Tjarda van Starkenborgh-Stachouwer, appointed 1936. Area 733,681 sq.m.; population (1930) 60,731,025; est. Jan. 1938, 65 millions. The population (census, 1930) is divided as follows: Java and Madura, 41,719,524; Sumatra, 8,238,570; Borneo, 2,194,533; Celebes, 4,226,586; rest of the archipelago, 4,351,812. Largest cities: Batavia (437,000), Surabaya (313,000), Bandung (167,000).

Laws are promulgated by the governor-general with the consent of the Volksraad (legislative assembly), which consists of 60 members and a president. The latter and half of the members are Dutchmen; the other members are representatives of the native population. While the more populous and developed islands are administered directly, the system of indirect government, with Dutch advisers appointed to native potentates, is widely employed in the so-called outer islands, such as Borneo, Celebes, and New Guinea.

Trade and Communications.—The trade of the Netherlands Indies in 1936 was valued at 551,560,000 florins for exports and 281,874,000 for imports. There were 4,416m. of railways, 3,368 in Java, and 1,019 in Sumatra; and at the end of 1930 there were 35,900m. of highways. Commercial aviation, which began in 1924 with an experimental flight between Batavia and Amsterdam, has expanded until aeroplanes travel more than 500,000m. annually (in 1936) and carry more than 14,000 passengers, 50,000lb. of mail and 150,000lb. of freight. The Netherlands Indies, especially Java, are rich in natural resources and have been intensively and efficiently developed. Among the main products are sugar, petroleum, tin, rubber, pepper, quinine, oil palms, tea, and coffee. The sugar industry has experienced a serious crisis because of the growth of nationalist economic measures; output declined from 2,843,000 tons in 1930–31 to 625,000 tons in 1935–36 as a result of government restrictive measures.

Finances and Banking.—The unit of currency is the Dutch florin (2*s.* 2·7*d.* in 1937). The Java Bank is the bank of note issue for the Netherlands Indies, and there are several other banking institutions. Revenue in 1937 was estimated at 437,125,343 florins and expenditure at 461,564,145 florins.

Education and Religion.—The great majority of the natives of the Netherlands Indies are of Malay stock and profess the Mohammedan religion. The total number of schools carried on in native languages in 1928 was 17,611, attended by 1,513,085 pupils. There were 786 Dutch language schools, with 146,275 pupils (37,599 Europeans, 81,281 natives, and 27,395 foreign orientals—mostly Chinese). In Java and Madura (1920) 6·5 per cent. of native males and ·5 per cent. of native females could read and write. A colonial army of about 40,000, mostly natives with Dutch in the higher commanding posts, is maintained.

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(W. H. CH.)

NEURATH, COUNT KONSTANTIN VON (1873–), German statesman, born in Württemberg, trained for the law, but adopted a diplomatic career, and was from 1930 to 1932 ambassador in London. From 1932 till Feb. 1938 he was foreign minister of the Reich. Count von Neurath paid a visit to Vienna in the latter part of Feb. 1937 to discuss Austro-German relations and the treatment of Nazis in Austria. At the beginning of May he met Mussolini and Count Ciano in Rome, where discussions took place on the strengthening of the 'Rome-Berlin axis'; and during June he visited in turn Belgrade, Sofia, and Budapest, on a mission to endeavour to strengthen the ties binding the States of S.E. Europe with Germany, and meeting the premiers of the three countries and the Tsar of Bulgaria. At the end of June, a proposed visit to London was cancelled at the last moment on the plea of preoccupation with the problems caused by alleged attacks on German shipping in the Mediterranean.

NEUTRALITY. Neutrality may be broadly defined as the attitude of a State in remaining aloof from a war between two States or groups of States, while observing towards them certain rights and duties based upon customary law and international conventions or treaties. It is, first of all, an attitude of political isolation, in the sense that it makes no effort to distinguish between the opposing groups in respect to the merits of the controversy, but rather regards them as being equally in the right to the extent that international law has imposed no restraint upon their recourse to hostilities. This conception of neutrality, which developed during the eighteenth and nineteenth centuries, concentrated upon the immediate concern of the neutral State to avoid being drawn into war.

The policy of isolation which characterized neutrality down to the close of the World War was, however, never accompanied by a policy of commercial isolation. Neutral States saw no reason why a war between two States should have the effect of cutting off their trade with either or both countries. They recognized certain traditional rights of the belligerent in respect to the maintenance of a blockade and the capture of contraband, but they sought to hold such interference with their commerce down to a minimum. More than once, as in the case of the United States in 1812 and in 1917, the neutral was led to declare war upon one of the belligerents in defence of its alleged rights of trade with the other.

In addition to the issues created by the interference of belligerents with neutral rights of trade, numerous controversies arose bearing, on the one hand, upon the violation of neutral sovereignty by the commission of acts of hostility by a belligerent upon neutral territory or in neutral territorial waters, and on the other hand, upon the extent of the obligation of a neutral to prevent the use of its territory as a starting-point for expeditions in favour of one belligerent against another. Municipal laws passed by a neutral State to give effect to its obligations towards the belligerents are known as 'neutrality laws', as distinct from the general international law of neutrality. Such were the neutrality Acts passed by the United States Congress in 1794 and 1818, and the British Foreign Enlistment Act of 1870.

The paradoxes attending the desire of neutral States to avoid being drawn into war, and their determination not to permit interference with their trade beyond the accepted rules, reached their height during the World War. Belligerents claimed that the old rules were obsolete when, under the changed conditions of warfare, they operated to their disadvantage; and then inconsistently upheld these rules when they operated in their favour. Thus the customary rule with respect to the capture of belligerent merchant vessels broke down when the submarine made its appearance as a destroyer of commerce. Again, the rule that there was no obligation on the part of the neutral State to prevent its citizens from shipping arms broke down when the United States became a vast arsenal of supply for the Allied Powers.

League of Nations.—At the close of the World War an effort was made to put an end to the status of neutrality by making all nations collectively responsible to protect one another, so that in the future, if war broke out, instead of being neutral they would determine which of two parties to a conflict was the aggressor and take sides against it. The United States, however, refused to become a party to the collective security system of the League of Nations, with the result that neutrality continued to be a possible legal status ; and it remained uncertain to what extent the United States would insist upon the traditional rights of neutral trade in the event of collective action by the members of the League against an aggressor.

Kellogg-Briand Pact.—The uncertainty continued even after the adoption of the Kellogg-Briand Pact which renounced war as an instrument of national policy and agreed that the settlement of all disputes should never be sought except by pacific means. Did this mean that, if the Pact were violated at the same time that the Covenant of the League of Nations was violated, the United States would accept such modifications of its neutral rights of trade as were necessary to avoid interference with sanctions imposed by the League against an aggressor ? The answer was not clear. The Pact contained no machinery to determine the question of its violation ; and there were loopholes in its obligations which prevented an automatic determination of the issue.

The imposition by the League of Nations of sanctions against Italy in 1935 raised the issue of neutrality in concrete form. In anticipation of Italian hostilities against Ethiopia, the United States Congress passed a law, Aug. 31, 1935, which, although designated a 'neutrality act', actually went beyond the traditional obligations of a neutral by prohibiting the shipment of arms and ammunition and the making of loans to belligerents. Inasmuch, however, as the law treated both belligerents alike, irrespective of the determination by the League that Italy was the aggressor, it still continued the policy of isolation.

A new law was passed by Congress on April 30, 1937, which extended the provisions of the law of 1935 by authorizing the president, if in his judgment the emergency called for it, to forbid the export of 'certain articles or materials' when necessary to promote the security or preserve the peace of the United States. These 'other articles' appeared to include goods that would normally be contraband, such as scrap iron, oil, cotton, and other raw materials of war industries. No American ship might carry them to a belligerent, but they could be obtained by the belligerent on what was popularly called the 'cash and carry' plan. This law concentrated upon keeping United States citizens out of the area of conflict. It was recognized by its proponents as not being a strict 'neutrality' law, and it was criticized by opponents as having the effect of favouring the belligerent which happened to have command of the seas and could come and buy what it needed. The test of the new law came when hostilities were begun by Japan against China in July 1937. The president, not wishing that Japan, after violating the Nine-Power Treaty, should get the practical benefits of the 'cash and carry' plan, took the position that, since neither Japan nor China had formally declared war, there was no compulsion upon him under the law to 'find that there exists a state of war'. The neutrality law was therefore not brought into effect (Jan. 1, 1938).

What is to be the future of neutrality ? The answer depends in large part upon the possibility of the development of an effective system of collective security, in which all of the leading nations shall take part. If such a system can be established, then each nation may be expected to find a strong national interest in the maintenance of international law and order, and neutrality in the presence of violations of the law would be as inconsistent between nations as between citizens under national law. Failing the establishment of a system of collective security, it would seem probable that, in the event of war, States not parties to it will be presented with the choice of asserting their traditional rights of trade at the risk of controversies with the belligerents, or of pursuing a policy of greater or less commercial isolation in the hope that by the sacrifice of their trade they may avoid being drawn into the conflict.

(C. G. Fe.)

NEUTRALITY LEGISLATION: *see* United States : *Foreign Affairs.*

NEVADA : *see* United States of America.

NEVIS : *see* Leeward Islands.

NEW BRUNSWICK, one of the original provinces which united to form the Dominion of Canada in 1867 ; area 27,985sq.m. ; population, 1931, 408,219 ; estimated Jan. 1, 1938, 435,000. Capital, Fredericton (8,830). The only other cities are Saint John (47,514), the most important port, and Moncton (20,689), the main divisional point of the Canadian National Railway in the maritime provinces. Of the province's population, 263,432, or 64 per cent., are rural ; 403,049, or nearly 99 per cent., are Canadian born. The present government assumed office in 1935 as the result of a Liberal victory over the Conservatives.

The New Brunswick Electric Power Commission, recently established, now owns and operates two generating stations, one near the city of Saint John and the second at Grandlake, in the Minto coal area. The former sells power to the cities of Saint John, Moncton, and Fredericton, and the latter to Newcastle and Chatham. Power is also distributed directly by the commission to a large number of villages and rural communities. The value of the net production for the province in 1934 was $58,732,376, an increase of nearly 25 per cent. over the preceding year. The maximum of the 14-year period ending in 1934 was reached in 1928. The high level of that year was followed by four years of decline. The estimated wealth of the province is $885,511,000 ; wealth *per capita* $2,118. The net value of manufactured products in 1935 was $27,643,366, a slight increase over the preceding year. The gross value of agricultural products in 1935 was $25,278,000. New Brunswick is not an important mineral-producing province, the value of the output in 1936 being only $2,499,380.

New Brunswick is represented in the Dominion Parliament by 10 Senators, appointed for life, and 10 members of the House of Commons, who are elected for five years or less.

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NEW CALEDONIA : *see* Pacific Islands, French.

NEWFOUNDLAND, island off the east coast of Canada, the earliest oversea British possession ; in theory a self-governing dominion, but ruled since the financial crisis of 1933 by a governor assisted by a governing commission consisting of three representatives of Newfoundland and three of the United Kingdom, responsible to the British Dominions Office. Labrador (*q.v.*) is a dependency of

Newfoundland. Area, 42,740sq.m.; population (census 1935), 289,500. St. John's, the capital (pop. 1935, 39,886) is the only town of over 10,000 inhabitants. The Anglican and Roman Catholic Churches are roughly equal in membership (about 95,000 each), closely followed by the United Church. The schools, mainly under government control, though denominational, number about 1,100, with some 56,000 pupils.

In March 1937, a petition to the King was prepared calling attention to the continuance of conditions of poverty and the increased expenditure under the commission of government, and asking for the restoration of normal governmental conditions and the recall of the British commissioners.

The principal industry is fishing, which employed 35,390 persons in 1937. There are over 800m. of railway, and steamers connect the coast with Cape Breton Island. The estimated revenue for 1937–38 was £2,022,835 and the expenditure £2,718,669. Exports—mainly newsprint, fishery products, and iron ore—were valued in 1936–37 at £5,611,615 and imports at £4,784,977. The dollar, of equivalent value to the American dollar, is the coinage standard.

NEW GUINEA consists of the British (Australian Commonwealth) territory of Papua, Netherlands New Guinea, and the mandated territory, which includes the Bismarck Archipelago and other islands.

Papua comprises the south-eastern part of the island of New Guinea, with a number of groups of islands. Capital, Port Moresby. Area: mainland, 87,786sq.m.; islands, 2,754sq.m. Population (1937), 1,306 Europeans and about 275,000 Papuans. The territory is administered by the Australian Commonwealth government through a lieutenant-governor, Sir Hubert Murray, K.C.M.G. Revenue (1936–37), £171,791; expenditure, £171,959. Exports (1936–37), £524,001; imports, £452,056.

Netherlands New Guinea consists of the portion of the main island W. of long. 141° E., with adjacent islands. It is governed with the Molucca Islands under the governor-general of the Netherlands Indies, Jhr. Dr. A. W. L. Tjarda van Starkenborgh Stachouwer.

The Mandated Territory of New Guinea, lying between the Equator and 8° S. lat., and between 141° E. and 156° E. long., comprises the former German dependencies of Kaiser Wilhelm's Land (New Guinea), the Bismarck Archipelago, and the eastern group of the Solomon Islands. The mandate is held by Australia, and is administered under an administrator, Brig.-Gen. W. R. McNicoll. Area: mainland, 70,000sq.m.; Bismarck Archipelago, 19,200sq.m.; Bougainville and Buka (Solomon Islands), 4,100sq.m. Population (1936): 5,881 Europeans (including 3,352 British, 477 Germans), 1,571 Asiatics, and 500,040 natives. Capital, Rabaul (New Britain). Rabaul was seriously damaged by volcanic eruption in June 1937, and plans were adopted for shifting the capital. Revenue (1935–36), £419,919; expenditure, £425,793. Exports (1935–36), £2,573,251; imports, £1,290,788. (H. V. H.)

NEW HAMPSHIRE: *see* UNITED STATES OF AMERICA.

NEW HEBRIDES, an archipelago in the South Pacific between latitudes 13° S. and 21° S. and longitudes 166° E. and 170° E., administered under a British–French condominium. British High Commissioner, Sir Arthur Richards, K.C.M.G. (Governor of Fiji and High Commissioner for the western Pacific); French High Commissioner, M. Marchessou (Governor of New Caledonia). Resident Commissioners: British, G. A. Joy; French, M. Sautot. There are English and French courts, and a mixed court presided over by a judge who is a national of neither country (Señor Manuel Bosch Barrett). Area, 5,700sq.m. approx. Population (1937): 197 British nationals, 750 French nationals, 1,042 French protected subjects, and about 40,000 natives. Budget (1936): joint revenue, £22,220; joint expenditure, £21,866. Expenditure on the British service in 1935 was £8,911. Trade (1936): exports, £122,068; imports, £123,800. (H. V. H.)

NEW JERSEY: *see* UNITED STATES OF AMERICA.

NEW MEXICO: *see* UNITED STATES OF AMERICA.

NEW SOUTH WALES. A State of the Australian Commonwealth, lying in the south-east, and occupying 309,432sq.m. The State governor, representing H.M. King George VI, is Lord Wakehurst. Population (Dec. 31, 1936), 2,682,000, forming 39·3 per cent. of the population of Australia. Capital, Sydney (*q.v.*). The premier of a Nationalist government is Mr. B. S. Stevens.

History.—Legislation in 1937 included a Public Health Amendment Act, designed to check the spread of infantile paralysis, particularly by preventing the admission of children from the State of Victoria; an Act providing for financial assistance to a company to work the shale oil deposits at Newnes; an Act to prolong a moratorium on mortgage debts for two years from Feb. 1938; an Industrial Arbitration Act applying the Commonwealth basic wage to State industrial awards; a Films Act giving renters the right to reject booked films and reducing the minimum quota of Australian films; a Betting Act to limit the number of days' racing at greyhound tracks; a Local Government Act providing for loans to county councils; and an Act imposing a uniform speed-limit of 30 m.p.h. in built-up areas.

A notable development in State politics was a movement of revolt in the Labour Party against the leadership of Mr. J. T. Lang after the federal elections, in which Labour was disappointed.

A campaign was begun to increase the physical fitness of school-children. The Sydney stock exchange established a fidelity guarantee fund, the first of its kind in Australia. There were important developments in transport; Diesel trains were introduced on the Sydney–Broken Hill line, and trolley-buses in Sydney; and big extensions were made to the State-owned 'bus services. Preparations were made for celebrating in 1938 the 150th anniversary of the founding of Australia.

Trade, Industry, and Finance.—The output of primary industries in 1935–36 was valued (gross) as follows: wool, £27,321,000; agriculture, £16,796,000; other pastoral, dairying, and farmyard industries, £20,432,000; silver lead ore, concentrates, etc., £3,816,000; coal, £5,127,000; other minerals, £2,577,000; forests, fisheries, trapping, £4,165,000; total, primary industry, gross £76,759,000, net £69,760,000; manufacturing industry, (net) £69,470,000. In June 1937, of 856,000 workers available for employment, only 56,000 were not normally employed (excluding relief workers). In November a record low level of 4·3 per cent. of registered unemployment was established, the figure in the previous November having been 9·9 per cent.

The budget for 1936–37 closed with a surplus of £74,310. For 1937–38, expenditure was expected to increase from £49,884,775 to £53,642,522, and receipts from £49,959,085 to £53,651,920, giving an estimated surplus of £9,398. These figures include the gross returns of railways and other business undertakings, which provided £24,488,095 of gross revenue and £7,839,428 of net revenue (excluding interest) in 1936–37. Net revenue from them in 1937–38 was estimated at £8,143,702. Of the increased budget expenditure in 1937–38, basic wage increases accounted for £1,507,000, and the full restoration of public service salaries for £645,000. The special wages and income taxes, imposed in 1931–32 for the relief of unemployment, were lightened by graduated reductions in tax on incomes under £1,000, by further reducing rates of tax on heads of families, and by exempting pension income where the total income did not exceed £200. These concessions were estimated to cost £1,700,000 in 1937–38 and £2,700,000 in a full year. Loan expenditure (not included in the budget) would fall from £8,028,968 gross to £7,225,000 gross in 1937–38, and from £7,182,523 net to £5,225,000 net. The net increase in the public debt in 1936–37 was £3,715,205. (H. V. H.)

NEWSPAPERS. The chief developments during the year in European and American newspapers are considered in this article.

British and European.—Economic pressure and political activities rather than journalistic developments made 1937 one of the most important years in newspaper history, causing production costs to soar, and forcing many papers on the Continent to increase their selling price, while in Italy the situation was met by government-decreed reduction of contents. In Great Britain the main effect was averted, the publishers having agreed to pay 15 per cent. extra for their newsprint to enable the mills to meet the rising costs of pulp and coal, but there was some reduction in canvassing for new readers, and the *Daily Express* eliminated second heads from many news stories, as a measure of economy.

Political developments led to censorship or suppression in most European countries and had their international reactions. Thus, Mussolini, annoyed by the attitude of most British newspapers to Italian activities in Abyssinia and Spain, practically boycotted the coronation of King George VI in May, withdrawing all Italian correspondents from London; such Italian reports as appeared dwelt only upon minor disturbances, magnifying them into large-scale outbreaks, though the Vatican City *Osservatore Romano*, which published normal accounts of the solemnity, was an exception. Mussolini also banned the importation of all British newspapers except the *Daily Mail*, *Evening News*, *Sunday Dispatch* (*i.e.* the 'Rothermere' journals), and *Observer*, which had followed a pro-Italian policy; this boycott was quietly raised later in the year. During May the *News Chronicle* correspondent was expelled from Rome.

In August, the British Home Office refused to renew the permits-to-stay of three London correspondents of the Berlin Press, and Hitler retorted by expelling Mr. Norman Ebbutt, Berlin correspondent of *The Times*, one reason given being the publication in 1933 of a series of articles in *The Times* on the First Year of Nazism, which had been republished in pamphlet form by the Friends of Europe group.

Many other journalists in various countries were either expelled or refused renewal of permits; the Yugoslavian authorities refused in July to renew the permit of Mr. Robert Harrison, Reuter's Belgrade correspondent, and in November, M. Paul Ravoux, chief correspondent of the French news agency 'Havas', was expelled from Berlin.

In England, the disappearance of the London *Morning Post* as a separate publication, after 165 years of independent life, was an outstanding event and was recorded with keen regret, although Lord Camrose, who purchased it and merged it with his *Daily Telegraph* on Oct. 1, announced that he would do his utmost to preserve its great traditions. The merger was the direct result of the 'trustification' of newspapers, it being to-day almost impossible for an independent national daily to attract the huge advertisement revenue necessary to meet the heavy production and distribution costs forced upon it by the enterprise of the combines. The *Morning Post* lost £40,000 during its last year and, not being solely a commercial venture, could not find the necessary capital to enter the field of 'big business'—even had its editor or proprietors been willing to do so.

Among other important events during the year was the separation, in January, after 35 years of partnership, of the Berry brothers' (Lords Camrose and Kemsley) newspaper interests; companies with an aggregate capital of £16 millions and owning 21 newspapers in London and in seven provincial and five other centres, in addition to more than 100 periodicals, were affected. Lord Camrose left the boards of Allied Newspapers Ltd. and its associated companies, retaining control only of the *Daily Telegraph* and *Financial Times*; Lord Kemsley acquired sole control of the *Daily Sketch*, *Sunday Graphic*, *Sunday Times*, *Sunday Chronicle*, *Empire News*, and of Allied's provincial and five other newspapers.

One month later, in February, Mr. J. S. Elias—later Lord Southwood—the one-time newspaper boy and printer's clerk who had become governing director of Odham's Press Ltd., publisher of the *Daily Herald*, *The People*, *John Bull*, etc.—acquired control of the aristocrats of British periodical journalism, Illustrated Newspapers, comprising the *Illustrated London News*, *Sphere*, *Bystander*, *Tatler*, etc. Associated with him in the deal, which was said to involve something like £500,000, was Sir John Ellerman, of the Ellerman shipping line.

In the provinces, the most interesting development was the purchase by Lord Kemsley of the *Newcastle Daily Journal, North Star and Courant*, founded in 1711. An even older publication—Britain's oldest extant daily newspaper—*Berrow's Worcester Journal*, founded as the *Worcester Postman* in 1690, was purchased during the year by Mr. Ivor Griffiths, formerly editor-in-chief of Provincial Newspapers Ltd., who amalgamated the owning company with the George Williams Press Ltd., then acquiring 11 other local newspapers. Earlier in the year, Lord Iliffe, companion of Lord Kemsley, acquired sole control of the *Reading Evening Gazette*, founded by Allied Newspapers in 1935.

It is difficult to say to what extent the aggregate sales of British newspapers appreciated during 1937, since full figures are not available. The *Daily Herald* maintained that its net sales throughout the year exceeded 2 millions per day; the *Daily Express* announced a December average of 2,404,285 compared with the year's average of 2,329,099; the *Daily Mail's* December certificate showed an average of 1,602,209, compared with 1,717,133 for Dec. 1936; and the *News Chronicle* averaged 1,323,472 compared with the 1936 average of 1,327,561. The Dec. 1936 average for the *Daily Telegraph* was 530,300. The first sales certificate issued for the combined *Daily Telegraph and Morning Post* was for October, and showed a figure of 630,000, or approximately 104,000 higher than the last previous certificate issued for the *Daily Telegraph* alone; the *Morning Post's* last issued figure was 116,734, being the average for July 1936–June 1937, inclusive. The end of the year saw the *Daily Telegraph & Morning Post's* December average at 634,743. *The Times* averaged 192,220 during the year, compared with 190,745 during 1936 and with 186,325 during 1935.

During 1937, there was some demand in political circles for new legislation to restrict newspaper reports and comments on foreign affairs, and to prevent unnecessary intrusion into private grief. No definite move was made in either direction, though journalists themselves constantly demanded drastic improvement in respect of the latter.

Allied to this subject were the preparation by Press interests of a new libel Bill which would protect newspapers from victimization; and the presentation of a private member's Bill for the creation of a journalists' register, a proposal that was supported by the Institute of Journalists, but strongly opposed by the most influential professional body, the National Union of Journalists.

In August and September, two English journalists were charged under the Official Secrets Act: a reporter on the *Daily Dispatch*, Manchester, was fined £5 for refusing to disclose the source of information behind a report in which, it was alleged, an almost exact reproduction of a confidential police document appeared; and a freelance of Hull was acquitted on charges arising out of the alleged disclosure of private information by a Post Office telephonist. The significance of these proceedings lay in the fact that the Official Secrets Act was called in aid in circumstances for which, apparently, it was never intended, and that they constituted a dangerous attack on the liberties of the Press, but, after a protest by the National Union of Journalists, the matter was allowed to drop.

Personal changes include the gradual relinquishment by Lord Rothermere, successor of his brother Lord Northcliffe, of direct control of his newspaper interests, his successor being his son, Mr. Esmond Harmsworth, M.P. The merging of the *Morning Post* with the *Daily Telegraph* involved the virtual retirement of its editor since 1911, Mr. H. A. Gwynne; Mr. W. L. Murray, general manager of Reuters, retired, as did Mr. R. J. Varrett, managing director of the *Financial Times;* and Mr. W. Lints Smith's long association with *The Times* as manager came to an end. On the other hand, Mr. Beverley Baxter, M.P., who left the editorship of the *Daily Express* in 1933 to join Gaumont-British films, returned to journalism as editorial adviser to Allied Newspapers.

Several big expansion programmes were opened during 1937, of which may be mentioned those by Allied Newspapers, *The Times*, the *News Chronicle* and *Star*, the *Daily Express* in Glasgow, and the Northcliffe *Evening Sentinel*, Stoke-on-Trent.

The most important press event in Germany was the formation of the semi-official concern, VERA, to acquire independent newspapers and force them into subservience to the existing régime. Transference to VERA was not directly forced; but since, under the Press Law, only Nazi party interests can risk acquiring newspapers, the independent proprietor had no alternative to selling to VERA after suppression, censorship, and the impossibility of publishing anything except what is in the interest of the government, had reduced the value of the property to nil. (L. H. D.)

United States.—In the offices of the 2,000 daily and 11,000 weekly newspapers of the United States, the year 1937 was chiefly marked by new financial problems, which were the theme of all publishers' meetings and reached a perplexing climax as the year closed. In spite of material gains in circulation and of an increase in advertising income during the first half of the year (which later declined during the 'recession'), newspapers faced an unprecedented rise in costs of newsprint, wages, taxes and security levies, machinery, and supplies. To meet these rising costs, nation-wide campaigns to raise circulation and advertising rates were launched, and December saw the 2-cent newspaper disappearing from the news-stands, replaced by 3-cent and even 5-cent newspapers.

Early in the year, a sharp rise in the price of Canadian newsprint, the chief paper supply of American newspapers, was announced, and by autumn the increase had amounted to about 17 per cent., with the two leading Canadian paper companies setting the 1938 price at $48 and $50 a ton. As a result, two movements were launched (one a co-operation of Texas publishers and the other a $5 millions project) to start manufacture of newsprint from southern timber—putting into production the results of laboratory experiments of some years before. Also in several cities, competing newspapers consolidated their business offices, and even their mechanical plants, to reduce costs.

While the typographical and other mechanical unions increased their strength and obtained widespread wage increases, the growth of unionization of editorial workers through the American Newspaper Guild raised editorial salaries, both in Guild offices and in other newspapers. In June, the Guild, which had in 1936 obtained an American Federation of Labor charter, voted to join the Committee for Industrial Organization, broadening its base to include all unorganized newspaper workers as well as editorial staff members, and to fight for 'the Guild closed shop'. Later in the same month, 565 newspaper publishers and executives, representing 11 organizations, met in Chicago, and voted to oppose the editorial closed shop as a menace to freedom of the press. By the close of the year, the Guild had added 27 more contracts, mainly open-shop, to the 23 previously signed, and announced that its membership had increased from about 5,500 to about 11,000. The Guild conducted nine strikes (Long Island, N.Y., *Press*, Bellingham, Wash., *News*, Flushing, N.Y., *North Shore Journal*, Seattle, Wash., *Star*, Decatur, Ill., *Herald and Review*, Brooklyn *Eagle*, Bayonne, N.J., *Times*, Waterbury, Conn., *Democrat*, and Wilkes-Barre, Pa., *Record*). The leading labour case won by the Guild during 1937 was that of Morris Watson, an Associated Press employee whose reinstatement was ordered, not only by the National Labor Relations Board, but also by the United States Supreme Court. Meanwhile, the American Press Society, an unaffiliated professional editorial staff organization, started in New York in 1936, gained size in its membership, limited to daily newspaper editorial workers of more than four years' experience.

Among the changes in ownership of larger newspapers, two trends were noteworthy: (1) the Milwaukee *Journal*, following the lead of the New York *Sun*, the Chicago *Daily News*, and Kansas City *Star*, completed reorganization on a plan of employee ownership. (2) Consolidation among the newspapers owned by William Randolph Hearst marked his fiftieth year as a publisher, and followed the death of Arthur Brisbane on Dec. 25, 1936. In June, Mr. Hearst merged the New York *American* with the *Mirror*, suspended the Rochester, N.Y., *Journal*, and shifted the Albany, N.Y., *Evening Times* into the morning to reduce competition. In Washington, D.C., he leased both the *Herald* and the *Times* to Eleanor Patterson. On Aug. 14, he merged the International News Service and Universal Service. On Sept. 1 he withdrew a petition for the sale of debenture issues of

35,500,000. In September, he regained the Milwaukee *Sentinel*, consolidated it with the *Wisconsin News*, and sold his interest in the Pittsburgh *Post-Gazette* to Paul Block. A month later he sold the Omaha *Bee-News*. During the year he reduced his chain from 25 newspapers in 18 cities to 20 newspapers in 14 cities.

Among the noted newspaper men who died during 1937 were: Rollo Ogden, 81, editor of the New York *Times* for 17 years and previously editor of the New York *Evening Post* for 29 years; Fred Fuller Shedd, 66, for many years editor of the Philadelphia *Evening Bulletin* and leader in the American Society of Newspaper Editors; F. E. Ives, 81, Syracuse, N.Y., inventor of the half-tone engraving; Frederick Burr Opper, 80, creator of 'Happy Hooligan'; Ed. Howe, 84, Kansas 'Sage of Potato Hill'; Edward H. Harris, 57, publisher of Richmond, Ind., *Palladium and Item*, and secretary of American Newspaper Publishers Association; and Robert W. Bingham, 66, owner of Louisville, Ky., *Courier-Journal*, and since 1933 ambassador to Great Britain.

Warfare between radio and newspapers subsided with the settlement out of court of the $1,700,000 suit of Transradio against 17 newspaper competitors. Another blow was dealt to 'shopping newspapers' by continued refusal of the Audit Bureau of Circulation to recognize free circulation publications. Growing public reaction against liquor advertising was evidenced by the refusal of 552 daily newspapers, one-fourth of the total, to carry advertisements of 'hard liquor', and among them 178 also barred beer advertising.

Statistics on American newspapers for the year, as given in the standard directories of Jan. 1938, are as follows: The number of English-language dailies decreased by 23 to a total of 2,084, including 1,605 evening papers and 479 morning newspapers; but their combined circulation increased to 41,400,000 daily, the highest on record, including 25,800,000 in the evening and 15,600,000 in the morning. Sunday newspapers increased by 15 to a total of 535 with a combined circulation of 31 millions. Rural and suburban weekly newspapers decreased by 176 to a total of 10,629; semi-weeklies decreased by 18 to 359. Foreign-language dailies increased by 11 to a total of 135 in 24 languages, and foreign-language weeklies increased by three to 294. A total of 120 daily and weekly negro newspapers were listed. The number of radio stations operated by newspapers increased to 169. (*See* also ADVERTISING.) (G. M. HY.)

NEW YORK CITY. For its 7,400,000 residents, 360,000 daily commuters, and 100,000 daily visitors New York City's government set several new achievement records in 1937, and incidentally threw into the arena of national politics two possibilities for presidential nomination in 1940—the re-elected mayor, Fiorello H. La Guardia, and the newly elected district attorney for New York county, Thomas E. Dewey. So notable, however, were the service gains and the improvements in reporting them, that even if La Guardia and Dewey had been defeated, 1937 would have been a notable year. Twenty district health centres were organized for progressively educating the people against mortality and sickness. Safe milk was cheapened. Four key death rates—mothers in childbirth, infants, typhoid, and tuberculosis—were reduced to New York's lowest, despite extensive unemployment, relief, poverty, and overcrowding in unfit and inadequate housing. Typhoid was so rare that it was hard to find cases for training young physicians. Infant mortality was 43·7 in a thousand; it was 100 in 1900.

Emergency relief became a municipal activity. For all home relief but mothers' pensions, an experimental concentration was ordered under one set of workers, where formerly each type had its separate staff-family—old age security, veterans, blind, etc.

Fox Photos]

NEW YORK CITY: THE EMPIRE STATE BUILDING, FROM WEST 34TH STREET

An experimental high school for specially talented children was started. The need for additional vocational and trade schools was recognized in both operating and capital budgets. Anti-Tammany members gained control of both the education and the higher education boards. The radio station WNYC was enlarged, and gave more attention to government.

Specially trained assessors of utilities and railroads were added to the city staff after nation-wide competition, in order to increase taxable valuations. Machines partly displaced hands in writing 14 million yearly property descriptions and tax computations. General real estate valuations were widely above sales levels; inequitably low assessments were also extensive. Governor Herbert H. Lehman declined to hear charges against Mayor La Guardia of inequitable and inefficient assessing.

Budget appropriations for 1938 rose to over $682 millions (£136,400,000); over $93,000,000 (£18,600,000) of appropriations being omitted from the advertised 'budget'. Emergency taxes remained, including a half-cent increase in water rates. Gross debt rose to almost $2,400 millions (£480 millions); net debt to $1,908 millions ($382 millions); borrowing margin fell to $81 millions (£16,200,000).

Civil service expanded and was strengthened in 1937. Party-named election inspectors and clerks were compelled to qualify by examination. Emergency relief workers were denied exemption from competitive examination. Scholarships at engineering colleges were given to firemen and sanitation employees ambitious to qualify for higher posts.

'In-service' training with civil servants was started by several departments. Eligibles for patrolmen were certified for firemen to save examination costs. Important disputed questions were settled by the highest court. A nine-point operation-research programme was advanced. Increased co-operation with universities was outlined, and a university director of studies into civil service efficiency was made civil service secretary. An electric scoring machine was introduced which scored 800 short-answer examinations per hour. A lower court ruled twenty-five an unreasonable age maximum for stenographer applicants. The former Mayor Walker's restoration to the city payroll with resulting pension after short service was prevented by popular indignation and a taxpayer's suit. Professional examiners' salaries were increased. Mandatory salary increments for city workers under $2,400 began. Pre-depression pay rates were restored. Hospital nurses won an eight-hour day.

Public works multiplied—parks, playgrounds, riverways, bridges, tunnels, subways. The old eyesore City Hall post office was abandoned for early destruction. Several enclosed markets displaced push-cart markets. A new 'Tombs' prison was ordered. Extensive slum-clearance projects were arranged with Washington and two were opened. A new water system to take water from the Delaware river was attacked in court as a $750 millions superfluity.

A new charter took effect in 1937: department heads must henceforth work full time, and have no other remunerative employment, unless unsalaried; a council of 26 was elected in place of an aldermanic board of 65; the council was elected by proportional representation within boroughs with minorities winning half the seats; a city planning commission will substitute a master-plan for present hit-or-miss building under special pressures; public works go under a single head, who will supervise through borough deputies; building and housing inspection are under one commissioner, the tenement house department disappearing; an appointive treasurer with accounting duties supplants the former chamberlain; the comptroller audits and 'controls'; an administrative code of former charter provisions, laws, and ordinances—3,350 pages, supplements, and implements short-charter powers; an assistant mayor will free the mayor from many details.

Politically 1937 marked several revolutions. The mayor pledged himself to make New York a 'union city'. Labour unions made him mayor again. Picketing was ubiquitous; a grand jury denounced it as a nuisance and an injury to business. Police interfered with 'sit-down' strikes only if employers so demanded. A five-day week for city employees was vetoed, not for economy, but because as voted it meant a four-day week for many. City officers helped to organize the American Labor party in favour of the mayor; two national labour groups gave the mayor 30,000 more votes under the labour emblem than his plurality of 433,000. They also drove Tammany out of the prosecutor's office in New York county; an aide of the special prosecutor and rackets destroyer, Dewey, was named commissioner of investigation by the mayor, and told to do for other counties what had already been done for New York county.

Tammany's defeat was so complete, except for councilmen, that its mayoralty candidate said later that the only way to salvage the Democratic Party in New York was to drop the name Tammany and move headquarters to a new locality with new connotation. The routing of Tammany by the Labour-Republican-Fusion coalition, and by its own illiterate and shallow campaign, despite support by national and State Democratic machines, killed two pernicious adages—that in New York a reform mayor never succeeds himself, and that even an indignant public does not want anti-Tammany prosecutors. (W. H. Al.)

NEW YORK STATE: *see* UNITED STATES OF AMERICA.

NEW ZEALAND, DOMINION OF, a self-governing member of the British Commonwealth of Nations, situated in the southern hemisphere about 1,200 miles to the south-east of Australia. The main group of three islands lies between lat. 34° 30′ S. and 47° 10′ S., and long. 166° E. 179° W. Outlying islands within the jurisdiction of New Zealand include Auckland Islands (uninhabited), Chatham Islands, Cook Islands, Niue, Kermadec Islands (mostly uninhabited), Ross Dependency in the Antarctic (between long. 160° E. and 150° W., and south of lat. 60° S.), and the Union (Tokelau) Islands. Capital, Wellington (North Island); ruler, King George VI (*q.v.*), represented by a governor-general, Viscount Galway, G.C.M.G. (*q.v.*); national flag (merchant ensign), a red ensign, with the Union flag in the quarter and four white stars in the field.

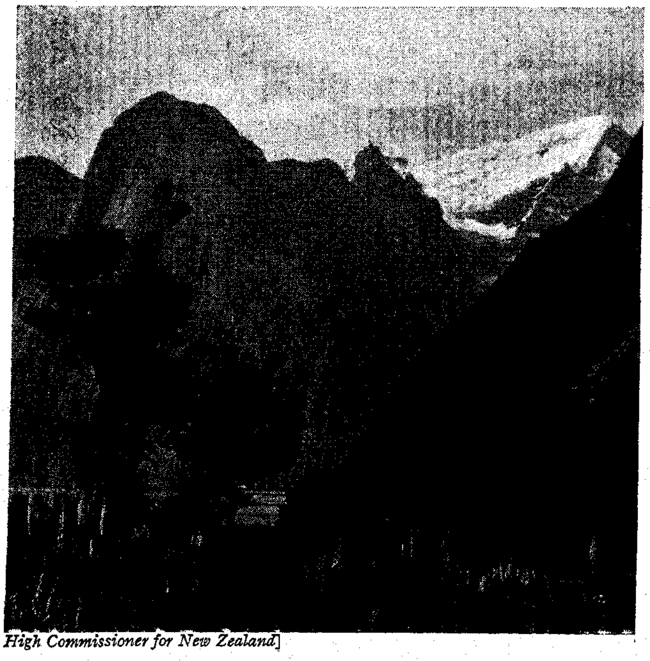
Area and Population.—Area: North Island, 44,281 sq.m.; South Island, 58,092sq.m.; Stewart Island, 670 sq.m.; Chatham Islands, 372sq.m.; Auckland and other neighbouring islands, 307sq.m.; Cook and other South Pacific Islands, 180sq.m.; Niue, 100sq.m.; Kermadec and Tokelau Islands, 17sq.m. Population (March 1936 census): North Is., South Is., Stewart Is., with islets, and Chatham Is., 1,573,810, including 82,326 Maoris; Cook group, 16,350; Tokelau Is., 1,170; Kermadec Is., 2. Estd. pop. (June 1937), New Zealand proper, 1,587,211, including 84,474 Maoris. Urban pop. (1936 census), 59·5 per cent. The Church of England numbered (1926 census) 553,998 adherents; Presbyterians, 330,731; Roman Catholics, 173,364; Methodists, 121,212; other Christians, 62,386; non-Christians or no stated religion, 102,783. The overwhelming proportion of the population speaks English, and in the native village schools instruction is imparted in English only. Education is free, secular, and compulsory between the ages of 7 and 14. Number of primary schools (Dec. 1936): public 2,460, with 201,172 scholars; private 309, with 27,709 scholars; Maori village schools 140, with 9,175 scholars. Leading cities (pop., April 1937): Auckland (*q.v.*) 214,200, Wellington 151,700, Christchurch 133,200, Dunedin 82,100.

Government and Constitution.—Labour cabinet: prime minister, minister of external affairs, native minister, etc., M. J. Savage; minister of education, health, etc., P. Fraser; minister of finance, customs, marketing, etc., W. Nash; minister of industries and commerce, railways, etc., D. G. Sullivan; attorney-general, etc., H. G. R. Mason; minister of labour, etc., H. T. Armstrong; minister of internal affairs, etc., W. E. Parry; minister of mines, etc., P. C. Webb; postmaster-general, etc., F. Jones; minister of agriculture, etc., W. Lee Martin; minister of lands, etc., F. Langstone; without portfolio, M. Fagan; parliamentary under-secretary, in charge of housing, J. A. Lee. The legislature consists of a legislative council of 38 members, nominated by the governor-general, and an elected House of Representatives of 80 members, including four Maoris elected by native voters. There was no general election in 1937.

The first session of the twenty-fifth parliament was prorogued on Nov. 3, 1936. The second session was opened by the governor-general on Sept. 3, 1937. His speech foreshadowed legislation for the co-ordination of the defence services, for the ratification of a number of International Labour Office Conventions, for increasing safety on the roads, for the extension of pensions for invalids, national superannuation and health insurance, the reorganization of the educational system, forestry development, local government reform, and facilitating the search for petroleum. A Primary Products Marketing Amendment Act was passed early in the session. It empowered the Marketing Department to fix maximum and minimum wholesale and retail prices for dairy produce, fruit, honey, eggs, and any other foodstuffs prescribed by order in council, and to buy foodstuffs at fixed prices, exporting the surplus over home requirements. Parliament adjourned on Dec. 10 until March 1, 1938.

The Labour Party, when out of office, had opposed the extension of the life of parliament from three to four years. Accordingly, the prime minister announced that the law would be repealed and that elections would be held in 1938.

History.—The most important internal developments were in the social and economic field. A serious strike of workers in freezing works at Auckland was ended on terms favourable to the workers. The government's housing programme, aiming at the building of 2,500 houses in 1937 and 5,000 per annum thereafter, was pressed forward. Rents for state-owned houses, ranging from £1 per week for a three-roomed flat to £1 13*s*. 6*d*. for a six-roomed house, were calculated on a business basis. The guaranteed prices for dairy produce in the 1937–38 season were fixed in August: butter, 13¼*d*. per lb. (compared with $12\frac{9}{10}$*d*. in 1936–37), and cheese, 7·54*d*. (compared with $6\frac{13}{16}$*d*.). Farmers and manufacturers claimed that costs had risen by upwards of 20 per cent., much more than the increase in the guaranteed price. Dairy farm workers' wages varied, under statute, with the guaranteed price; in July 1937 they were £2 2*s*. 6*d*. per week *plus* keep. By order in council, 1937–38 wages on wool, meat, and grain farms were fixed at the same level, this being the first time that such wages had been legally determined. The industrial basic wage had been fixed in Nov. 1936 at £3 16*s*. a week for adult male workers; in Sept. 1937 standard wages for casual labour were fixed at 2*s*. 4*d*. per hour for unskilled, ranging up to 2*s*. 9*d*. per hour for fully skilled work.



High Commissioner for New Zealand]

PEMBROKE PEAK AND THE LION, SOUTH ISLAND, NEW ZEALAND

As in Australia (*q.v.*), there were sporadic anti-Japanese demonstrations. Port workers refused to load cargoes in Japanese ships. The government induced them to return on condition that no scrap metal was loaded, and a general ban was thereupon imposed on the export of scrap metal. New Zealand was represented, and voted with the majority, at the Nine-Power Conference (*q.v.*) at Brussels. In the governor-general's speech to Parliament, the government reaffirmed their attachment to the principles of the League Covenant, and their conviction that a collective system for the maintenance of world peace was the only rational and effective means of achieving that end and facilitating general disarmament.

Trade, Industry, and Communications.—The gross value [1] of farm produce in 1935–36 [2] was £60,500,000, comprising: agricultural produce, £7,400,000; pastoral produce, £28,800,000; produce of dairying, poultry and bees, £24,300,000. Value of timber exported (1936), £366,350. Value of fish exported (1936), £181,677. Value of mineral production (1936): gold, £1,272,587; coal, £2,140,217. Exports (1936–37) [2]: £64,600,000, including £18,800,000 worth of wool imports, £50,100,000. Of the trade balance of £14½ millions, only about £10 millions was required for debt service, but bank funds abroad fell by £7 millions, suggesting a net outflow of capital.

The gross output of factory industry was valued at £90,014,748 in 1935–36, the added value being £30,074,355. Food industries accounted for £50,704,917 of the gross total and for £9,386,357 of the net. The number of unemployed at Sept. 25, 1937, was 36,450.

The railway mileage open in March 1937 was 3,509m., of which all but 189m. was government owned. Railway operating revenue in 1936-37 totalled £6,903,604, and operating expenditure £6,338,385. The mileage of paved or surfaced roads was 27,834m. at March 31, 1936, including 12,114m. of main highways, whose maintenance cost £1,096,754 in 1936–37.[3] Steam and motor tonnage on the New Zealand register at Dec. 31, 1936, totalled 183,005 tons gross and 96,405 tons net. Excluding coasting vessels, 2,889,708 tons of shipping were entered into New Zealand ports in 1936. During the 1937 Imperial Conference (*q.v.*), the United Kingdom, Australia and New Zealand governments discussed the problem of competition from subsidized American ships on the trans-Pacific routes. No final agreement was then reached, but there was general assent to aiding the Canadian-Australasian line to construct two new ships.

Internal air services have advanced rapidly during the past two years. Their route mileage at June 1937 was 1,623m., and their flying mileage in 1936 was 897,106m. In Oct. 1936 New Zealand reached substantial agreement with the Australian and United Kingdom governments for the establishment of a flying-boat service for the carriage of all first-class mails between London and Auckland. An Imperial Airways flying-boat made experimental flights across the Tasman Sea to the Auckland terminal in 1937, and similar flights were also made by Pan-American Airways flying-boats, which inaugurated an air-mail service between New Zealand and the United States, having interchange connexions with the United States–China service.

[1] Unless otherwise stated, values are expressed in New Zealand currency. For rates of exchange, see below.

[2] Year to June 30.

[3] Year ended March 31.

The Broadcasting Act of 1936 vested the control of the broadcasting service in a minister of the Crown. Its administration is in the hands of a director of broadcasting, appointed by the governor-general in Council. The Act provides that advertising programmes may be broadcast from special commercial stations owned by the Crown, provided an alternative non-commercial service is available to local listeners. Proceedings of Parliament, including the 1937 budget speech, have been broadcast.

Currency, Exchange, and Banks.—The New Zealand pound (£NZ) (with sub-units as in English money) had throughout 1937 a value 20 per cent. below that of sterling, *i.e.* approximately 16*s.* sterling. The currency reserve consisted (Dec. 20, 1937) of £2,800,000 (nominal) of gold and £16,880,000 of sterling exchange, the ratio to all sight liabilities being 70·8 per cent. The active note circulation in Sept. 1937 was £9·3 millions, and commercial bank deposits totalled £65·1 millions.

The national accounts for 1936–37 (budget year ends March 31) closed with a surplus of £472,000, expenditure totalling £30,675,000 and revenue £31,147,000. The minister of finance, in his budget speech on Sept. 28, forecast an increase of revenue to £34,778,000 in 1937–38, and of expenditure to £34,427,000. Social services (excluding unemployment relief) would cost £12,168,000 instead of £9,913,000, and defence would cost £1,600,000 instead of £1,192,000. The public works programme was raised to £17,367,000. Taxation was unchanged.

Defence.—The New Zealand Division of the Royal Navy, maintained by the Dominion government and manned in the lower ranks by New Zealand personnel, consists of two cruisers and smaller vessels. There is a very small permanent land force, including 106 officers and 436 instructors. The strength of the volunteer territorial force on Aug. 1, 1937, was 8,282. The air force similarly comprises a permanent cadre and a voluntary territorial force. It was reorganized in 1937; a reserve of pilots was established, and a scheme of short-service commissions in the Royal Air Force for New Zealand pilots was inaugurated.

The New Zealand government informed the Imperial Conference that they attached the greatest importance to close imperial co-operation in defence matters, and especially to the Singapore base. 'We made it plain', said the Dominion prime minister on his return, 'that we were concerned, not only with the defence of our own shores and our own people, but also with the defence of the whole British Commonwealth'.

BIBLIOGRAPHY.—W. B. Sutch, *Recent Economic Changes in New Zealand.* (H. V. H.)

NICARAGUA, a Central American republic; language, Spanish; capital, Managua; president, Anastasio Somoza. The area is 49,200sq.m. Population (est. 1935), 638,119. The chief cities are: Managua (60,342); León (47,234); Granada (18,000). Señor Somoza took office on Jan. 6. In August, when Nicaragua issued a stamp showing her interpretation of the Honduras boundary line, a two-year dispute with Honduras was brought to a head, with threatened hostilities on the border. Costa Rica, the United States, and Venezuela proffered mediation, with the result that on Dec. 10 the two disputants agreed to accept arbitration. In July, attention was focused again on the proposed Nicaragua canal, when President Somoza offered the United States military privileges in return for funds with which to canalize the San Juan river. Nicaraguan agriculture suffered heavily from a locust plague of several months' duration. By November it was reported that half the cotton, corn, rice, and bean crops had been destroyed· Rising prices, augmenting living costs, and tight credits kept business at a low level throughout 1937. Nevertheless, in December, Somoza announced a balanced budget and promised agricultural relief. Nicaragua has 171m. of Government-owned railroad, and an undetermined amount of short privately-owned lines. There are approximately 900m. of roads. In Nov. 1937, the government called for bids for further roads to be constructed over a period of years at a cost estimated at £2 millions. Imports for 1935 totalled £1,014,573, exports £1,131,623, representing a 9·1 per cent. increase. Principal imports are textiles, foodstuffs, and machinery; principal exports are coffee, bananas, gold. Foreign trade is largely with the United States. In 1936–37, the total United States trade aggregated nearly £1,200,000, an increase of one-third. The monetary unit is the cordoba (value: approx. one shilling and eight pence). There are approximately 700 schools, with an enrolment of about 44,000. Budgetary allotments from the Government are very small. (L. W. BE.)

NIEMÖLLER, MARTIN (1892–), German theologian, born at Lippstadt in Westphalia, Jan. 14, 1892. Distinguished during the World War as a submarine commander, he later turned to farming and then to theology, and eventually became pastor of the wealthy Dahlem parish of west Berlin. As an ardent nationalist and opponent of communism, Niemöller at first welcomed National Socialism, and even joined the party, but in the summer of 1933, events turned him into a defiant opponent of the Nazi effort to bring the Lutheran Church under the domination of the totalitarian State. Niemöller therefore formed the Pastor's Emergency League of some 7,000 Protestant pastors, became the leader of the more defiant wing of the opponents of Nazi control over religion, known as the Confessional Church (*Bekenntniskirche*), and helped to draw up its famous 'Six Principles' at the Synod of Barmen in May, 1934. His theology is the Gospel of Jesus, as it is laid down in the Holy Scriptures and Protestant creeds or confessions of the sixteenth century. He continued to preach courageously at Dahlem against Nazi totalitarian control over the Church until July 1, 1937, when he was arrested and imprisoned. Although 120 other imprisoned pastors were set at liberty on Christmas Eve, 1937, Niemöller was not among them. On March 2, 1938, following a trial conducted in secret, Niemöller was sentenced to 7 months' honourable confinement and a fine of 500 marks, with a subsidiary fine of 1,500 marks or 3 months' imprisonment. He was subsequently kept in 'protective' custody. (*See* also GERMANY.) (S. B. F.)

NIGER: *see* FRENCH WEST AFRICA AND THE SAHARA.

NIGERIA. A British crown colony and protectorate in west Africa on the northern shore of the Gulf of Guinea, bounded W. by Dahomey, N. by the French Niger colony, and E. by the Cameroons. The British mandated territory of the Cameroons (*q.v.*) is united with it for administrative purposes. The territory in the neighbourhood of Lagos forms the colony of Nigeria; and two groups known as the Northern and Southern Provinces form the protectorate. Government is 'indirect' through native authorities, the most important of these being the Emirs of Kano and Sokoto. Governor, Sir B. H. Bourdillon, K.C.M.G., K.B.E. Capital, Lagos.

Area and Population.—Total area, including the Cameroons, 372,674sq.m. (colony 1,381sq.m.; Northern Provinces 281,778sq.m.; Southern Provinces 89,515sq.m.); total pop. 19,928,171 (colony *c.* 333,000, Northern Provinces *c.* 11,303,500; Southern Provinces *c.* 8,140,600), The principal towns are Lagos, Port Harcourt, Kano, and Calabar. Northern Nigeria is preponderantly Mohammedan. The two boards of education for the north and the south ensure a unified system between the education department, the missions, and native administrations. There is a Higher College at Yaba, and two government Middle Schools at Ibadan and Umahia which, with King's College, Lagos, provide candidates for the Higher College.

Trade and Communications.—The Nigerian Railway has a length of 1,905 m. The western line runs from Lagos to N'guru; the eastern starts from Port Harcourt and joins the western at Kaduna. There are 3,775 miles of gravelled roads usable in all seasons; a government telegraph system; 21 telephone exchanges and 4 trunk lines. A radio distribution service by land line was inaugurated in Dec. 1936. Work has started on aeroplane landing grounds at Maduguri, Kano, Kaduna, Minna, Oshogbo, and Lagos.

Apart from a motor transport strike at Lagos in mid-January, few events of note occurred during 1937. Nigeria decided to contribute £75,000 to the cost of the British rearmament programme; and on March 31 the first conference of the native rulers of the Southern provinces took place, on the lines of the provedly useful conferences between Northern rulers.

Prices of produce advanced during 1936; record tonnage was reached in the export of palm oil, palm kernels, cocoa, and cotton lint. Total exports for 1936 were valued at £11,601,233, and imports at £7,735,622.

British silver coins, and West African currency Board Notes and coins are in circulation. Revenue for 1936 was £5,305,104, and expenditure £4,823,650.

See Margery Perham, *Native Administration in Nigeria*, 1937.

NINE-POWER CONFERENCE, THE. This conference originated in the League Assembly's resolution of Oct. 6, which invited League Members, signatories of the Nine-Power Treaty of 1922, to consult together as provided in that Treaty, regarding the Sino-Japanese conflict. In the hope of securing Japanese participation, the Belgian government was asked, at the suggestion of the United States, to hold the conference at Brussels, and on Oct. 15 invitations were issued, on behalf of the British and U.S. governments, to all signatories of the Treaty—China, Japan, Belgium, France, Italy, the Netherlands, Portugal, U.S.A., the United Kingdom and the Dominions (signatories by virtue of the Statute of Westminster), and subsequent adherents—Bolivia, Denmark, Mexico, Norway, and Sweden. The Japanese Government declined this invitation on Oct. 27, saying that the League had failed to take account of Japan's 'just intentions' and had cast reflections on her honour. Germany and the U.S.S.R. were then invited, only the latter accepting.

The conference opened on Nov. 3, and the principal speakers (except the Italian and Soviet delegates who, though for different reasons, were sceptical of the conference's value) stressed the importance of Japan's collaboration in the search for a peaceful solution of the conflict, and emphasized their direct interest in the restoration of stable conditions in the Far East.

The suggestion of a small mediation committee having failed to gain acceptance, the conference despatched on Nov. 6 a final appeal to Japan to reconsider her decision, reasserting the right of the other signatories to consult together. The Japanese government replied negatively on Nov. 12, declaring that intervention by third parties would only excite public opinion and render a solution more difficult, but giving an assurance that the interests of third parties would be respected.

Its efforts to conciliate Japan thus rebuffed, the conference, on Nov. 15, adopted a declaration, by 15 votes to 1 (Italy), with Denmark, Norway, and Sweden abstaining, stating that there was no warrant in law for the Japanese aim of changing by armed force the policy of China, and that the Powers must consider what was to be their common attitude in the circumstances.

The conference adjourned on Nov. 24 *sine die*, after adopting a report on its work and a declaration reiterating the general principles already enunciated. Provision was made for its recall should the chairman or members so recommend. (S. A. He.)

NITRATES. There are small deposits of nitrate-bearing earth or shale in Chile, Egypt, and Spain, which are locally used to a small extent for fertilizer, and an output of 6,000–8,000 tons of potassium nitrate in India, but the only natural nitrates exploited on an extensive scale are the caliche beds of northern Chile, which carry 10–25 per cent. of sodium nitrate, and which supplied the bulk of the world's nitrate requirements for a century. The maximum output attained was 3,238,000 metric tons in 1929, declining to 439,000 metric tons in 1933, with a recovery to about three times that amount in 1936. In addition to the general industrial depression, the Chilean industry faced even more troublesome factors in the development of other sources of nitrogen, particularly that recovered in the by-product coking of coal, and the synthetic product derived from the nitrogen of the air. Although the beginnings of these competing sources date back to before the World War, the first real progress was an outgrowth of the war, when Germany was cut off from supplies of Chilean nitrate, and was forced to push the development of the synthetic processes. Steady progress was made following the war, spreading to other countries, and the combination of these forces gradually wore down the natural nitrates industry to a point where in 1929 it furnished only 23 per cent. of the world supply, and after the depression still less, with Chilean nitrate in 1933 supplying only 4 per cent. of the total. The construction of synthetic plants has now reached a point where their capacity is more than sufficient to supply the entire demand for combined nitrogen, and the natural nitrate industry survives only through the tolerance of its synthetic competitor. (G. A. Ro.)

NITROGEN, HEAVY. It was announced, on Sept. 6, 1937, that Dr. Harold Urey, of Columbia University, New York, the discoverer of 'heavy' water, had isolated 'heavy' nitrogen, and was producing it as a liquid in ammonium compounds. A practical application of this discovery is in the investigation of digestive processes, nitrogen being a constituent of all living tissues. (*See* HYDROGEN, HEAVY; ISOTOPES OF THE LIGHTER ELEMENTS, SEPARATION OF; PHYSICS.)

NOBEL PRIZES. The following awards were made in 1937:

Physics.—Dr. Clinton J. Davisson of New York, and Prof. George P. Thomson of London, for experimental discovery of interference phenomena in the irradiation of crystals by electrons.

Chemistry.—Prof. W. N. Haworth of Birmingham, for research on carbohydrate and vitamin C, and Prof. Paul Karrer of Zürich for research on carotinodes and flavins and vitamins A and B2.

Medicine.—Prof. Albert von Szent György, University of Szeged, Hungary, for research in connexion with vitamin C.

Literature.—M. Roger Martin du Gard, French novelist and critic, author of *Les Thibault.*

Peace.—Viscount Cecil of Chelwood, president of the League of Nations Union.

NOGALES, RAFAEL DE, Venezuelan soldier; born at San Cristobal, 1880; died Sept. 1937. Nogales fought wherever and whenever he found the opportunity, and the full story of his life would read like an incredible tale of adventures. He was, moreover, a man of considerable culture, and he has left records of his activities in *Four Years Beneath the Crescent,* 1926; *Memoirs of a Soldier of Fortune*; *Silk Hat and Spurs,* and *The Looting of Nicaragua,* 1932.

NON-INTERVENTION COMMITTEE. The Non-Intervention Committee was formed to implement the agreement not to intervene in the Spanish civil war, which, on French initiative, had been reached among the leading European Powers. The committee's meetings have been held in London, the first of them being held early in Sept. 1936. Twenty-six nations were represented at the first meeting, and this number was later brought up to 27 by the adhesion of Portugal. The British foreign secretary, Mr. Eden, was elected chairman, but at most of the meetings Lord Plymouth has deputized for him; members of the committee, other than the United Kingdom, have normally been represented at it by their respective *Chefs de Mission* in London. One of the committee's first decisions was to appoint a chairman's sub-committee to assist the chairman in day-to-day work, the members being Belgium, the United Kingdom, Czechoslovakia, France, Germany, Italy, Sweden, and the Union of Soviet Socialist Republics. This sub-committee is composed of those Powers, other than Portugal, who, by reason of their importance, geographical position, or the size of their armaments industry, are most directly concerned with the policy of non-intervention; and in fact some of the most important discussions have taken place in this Sub-Committee.

The committee's history cannot be understood without reference to political factors and the progress of the civil war itself. Its proceedings have been dominated by Germany's and Italy's unfeigned support for General Franco, by Russia's equally open preference for the Spanish government, by France's sympathy with the latter, and by the United Kingdom's unswerving but uneasy neutrality. Definite results have been farthest off when a definite decision in the war has been in sight, and nearest when the military situation has suggested a stalemate.

The first substantive question with which the committee had to deal was to ascertain what legislative measures had been taken to give effect to the ban on the export of arms and munitions to Spain, and on the recruitment, enlistment, and transport of volunteers for service there. This led to the even thornier problem of obtaining, amidst flagrant breaches of the Non-Intervention Agreement and the atmosphere of suspicion which they engendered, agreement to the principle of a system of supervision; and when this was reached, early in 1937, it was some time before agreement was attained on the scheme itself. The abandonment of the Soviet claim to participate in a naval patrol led to the adoption of a scheme whose essential features were: (1) a corps of British observers to watch the Portuguese frontiers; (2) a corps of international observers on the Pyrenees frontier; (3) control of coasts by (*a*) naval patrols supplied by the fleets of Great Britain, France, Germany, and Italy, (*b*) observers to be carried by the ships of the participating countries when bound for Spanish ports; (4) a Non-Intervention Board to administer the scheme.

Keystone]

M. CORBIN (FRANCE), BARON E. K. PALMSTIERNA, THE SWEDISH MINISTER, AND HERR VON RIBBENTROP, LEAVING THE FOREIGN OFFICE

This scheme came into force in April, but, following the bombing of one German cruiser employed in the patrol and an alleged torpedo attack on another, Germany and Italy withdrew from the naval patrol, and the frontier controls were suspended. After prolonged negotiations, a compromise basis for the renewal and control proposed by Great Britain has been accepted. This involves (1) the stationing of international officers in Spanish ports; (2) the sending of a commission to Spain to arrange and supervise the withdrawal of non-Spanish nationals; (3) the grant of belligerent rights at sea to the combatant parties when the commission reports that satisfactory progress has been made with this withdrawal. At the moment of writing, technical sub-committees are at work on the administrative details necessary to carry the new scheme into effect. (W. T. WE.)

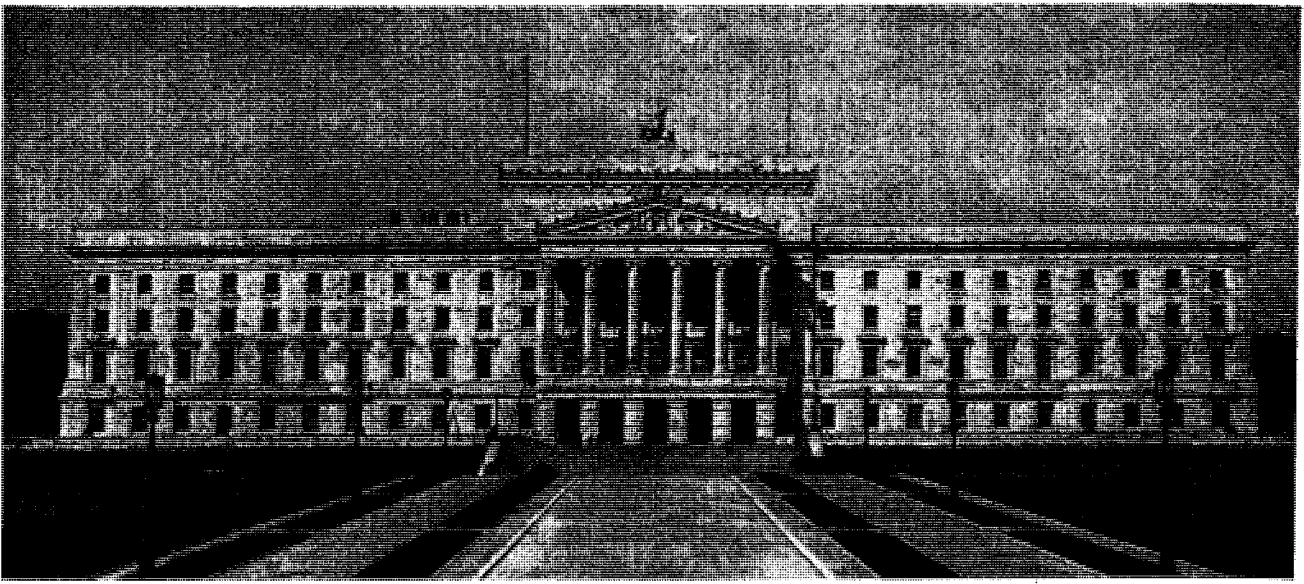
NORRIS, WILLIAM FOXLEY, K.C.V.O., D.D., British clergyman; born Feb. 4, 1859; died Sept. 28, 1937. He was educated at Charterhouse and Trinity College, Oxford, was ordained in 1882, and was successively vicar of Shirburn, Oxon. (1886), and of Almondbury, Yorks. (1888), rector of Barnsley (1901), and Archdeacon of Halifax (1906). From 1917 to 1925 he was Dean of York, and in 1925 was appointed Dean of Westminster. Upon his shoulders fell a very large proportion of the burden of preparation for the coronation ceremonial in 1937. The Dean was a Fellow of the Society of Antiquaries, and was created a C.V.O. in 1929, and a K.C.V.O. in 1934. He married, in 1884, Mary Blanche Pott, and had a son and two daughters. His successor as Dean of Westminster, appointed on Nov. 17, is the Rt. Rev. P. F. D. de Labilliere, formerly suffragan bishop of Knaresborough.

NORTH BORNEO, STATE OF: *see* BORNEO.

NORTH CAROLINA: *see* UNITED STATES OF AMERICA.

NORTH DAKOTA: *see* UNITED STATES OF AMERICA.

NORTHERN IRELAND, comprising the six Ulster counties of Antrim, Armagh, Down, Fermanagh, London-



Fox Photos]

BELFAST. THE HOUSE OF PARLIAMENT

derry, and Tyrone, forms part of the United Kingdom of Great Britain, but (since 1920) has its own parliament and executive, though also represented in the Imperial Parliament by 13 members. Capital, Belfast. Ruler and national flag, as for Great Britain.

Area and Population.—Area: 5,237sq.m. Population (1937): 1,279,177 (density 246 per sq. m.).

Religion.—There is no Established Church. About 33·75 per cent. of the population is Roman Catholic; 31·4 Presbyterian, and 27 Protestant Episcopalian.

Educational System.—Education is conducted under the Northern Ireland Ministry of Education in a manner similar to that obtaining in the rest of the United Kingdom. Latest statistics report 1,753 elementary schools (200,607 pupils), 73 grant-aided secondary schools (13,165 pupils), 124 centres for technical instruction (23,218 students), and the Queen's University of Belfast, with 144 professors, lecturers, etc., and nearly 1,600 students.

Leading Cities.—The largest are Belfast (pop. 437,824) and Londonderry (pop. 47,857).

History in 1937.—There were no constitutional changes or by-elections. Changes in the ministry were caused by the death in April of the Rt. Hon. J. W. Pollock, minister of finance; he was succeeded by the Rt. Hon. J. M. Andrews, minister of labour, whose place was filled by Major D. Graham Shillington, Unionist member for Armagh Central. In December Mr. J. H. Robb replaced Viscount Charlemont as minister of education, and Mrs. Debra Parker, member for South Londonderry, became Parliamentary Secretary to the ministry of education and the first woman to hold government office in Northern Ireland. A Law Reform Act was passed assimilating the status of married women to that recently attained in Great Britain, making better provision for compensating victims of accidents, etc. A census was taken on Feb. 28. In July King George VI visited Belfast, his welcome being marred by outrages on the Free State frontier, including the burning of customs posts. In September work was commenced at Belfast on a new airport on a site of 365 acres reclaimed by the Harbour Commissioners.

Trade and Communications.—The principal industry is agriculture; there are over 900,000 acres under crops, in about 95,000 holdings. Shipbuilding (1936 output, 62,525 tons) and the linen industry follow, both centred in Belfast. The total volume of external trade in 1935 was £92 millions. There are some 750 miles of railway and 13,000 of roads. A Road Transport Board (formed 1935) has assumed the management of goods and passenger transport.

Finance and Banking.—There is no special local currency; the monetary system is that of Great Britain. For the financial year ended March 1937 the total budgetary revenue was £11,596,818; the corresponding expenditure £11,541,868, showing a surplus of £54,000. The budget estimates for 1937–38 balance at £14,684,000, allowing for contributions to Imperial funds. Taxation is mainly collected by the Imperial government, which, after making certain deductions, hands over the balance to the local exchequer. The banking system resembles that of Great Britain; on Dec. 31, 1936, the three principal local banks held deposits of £49,857,000.

Defence Forces.—Northern Ireland has no separate defence forces. It is policed by the Royal Ulster Constabulary (maximum strength 3,000), and a part-time Special Constabulary.

NORTHERN TERRITORIES: *see* GOLD COAST.

NORTHERN TERRITORY (of Australia), governed by the Australian Commonwealth through an administrator; comprises Central Australia (capital, Alice Springs) and North Australia (capital, Darwin). It elects one non-voting member to the Commonwealth House of Representatives.

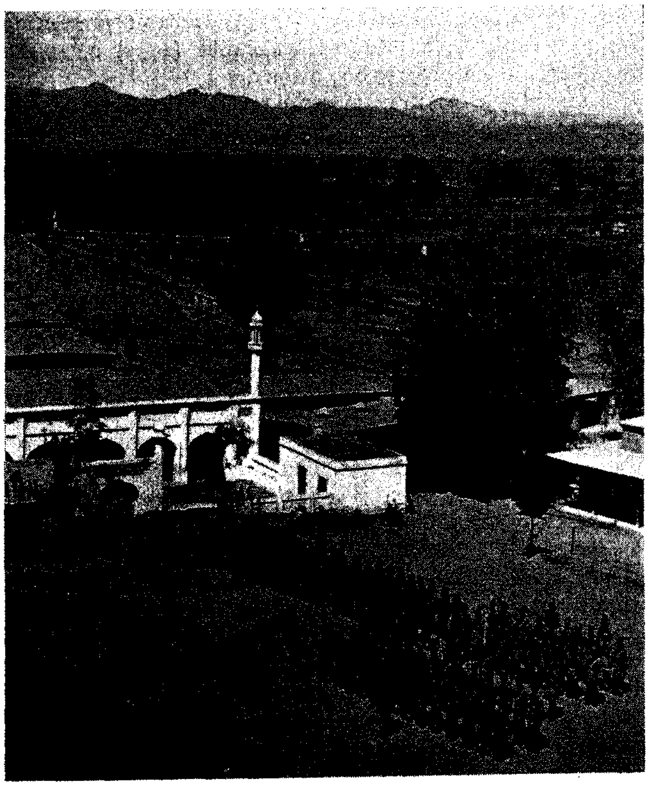
Area, Population, and Cities.—Area: 523,620sq.m. European and Asiatic population (1937), 5,454. Aboriginal population (1935), 18,244. There are 15 aboriginal reserves, area 67,244sq.m. Population of Darwin (1933 census), 1,566.

History.—Controversy was aroused by the appointment of Mr. C. L. A. Abbott, a member of the House of Representatives, as administrator. In April, the government appointed a committee of inquiry into the Territory's resources and possibilities, consisting of Mr. W. L. Payne, chairman of the Queensland Land Administration Board, and Mr. J. W. Fletcher, a Queensland pastoralist. Reporting in December, they declared that the Territory could have been better governed if it had been divided between adjoining States. Their recommendations included the abolition for 20 years of the Territory's income-tax, petrol tax, and all tariffs; the proclamation of Darwin as a free port; the construction of two railways into the Territory from Dajarra (Queensland) and Wyndham (Western Australia); exchange of cattle for sheep grazing, and the decentralization of the administration. Revenue considerations must be subordinated to those of production and development. A population of 15,000 within a decade was a sufficiently progressive aim.

Trade, Finance, and Communications.—Production in 1936–37 was estimated at £499,000. Net payment from Commonwealth budget was £611,000. Darwin gained income from its position as an air-port, and a strategic base there was planned, to cost £400,000. (H. V. H.)

NORTH-WEST FRONTIER PROVINCE. The name of this Indian province indicates its position. It consists of five districts which originally belonged to the Punjab, and of adjacent areas which are administered with the districts; and the governor (Sir George Cunningham since March 1937) is also agent to the governor-general for a number of tribal areas lying between the British frontier and Afghanistan—Dir, Swat and Chitral, Khyber, Kurram, and Waziristan. The British districts and administered territories have an area of 13,518sq.m., and a population estimated at 2,425,076: the tribal area covers another 23,000sq.m. The languages spoken are Pushtu and Western Punjabi. The seat of government is at Peshawar (pop. 121,866); and in the recent constitutional changes the province has been given a legislative assembly with a membership of 50. It is heavily subsidized by the central Government.

The inhabitants are 92 per cent. Moslems (chiefly Pathans) and 6 per cent. Hindus; and only 1 man in 12 and 1 woman in 100 are able to read and write in their vernacular. Political agitation, however, has been active, an organization which calls itself 'The Servants of God' maintaining a loose connexion with the extreme Congress Party. They succeeded in displacing the ministers of the coalition which, under the leader of the United Moslem Party, had first formed a cabinet.



Fox Photos]

FRONTIER CONSTABULARY ON PARADE IN THE GROUNDS OF THE SHABKADAR FORT, NORTH OF PESHAWAR

Nearly a third of the cultivated area is irrigated, by canals from the Swat river and the Indus and by wells; and wheat is abundantly grown. Maize, millets, and oilseeds come next in importance, with some fine sugar-cane and tobacco. Industries are mostly of the cottage type, but the province has a commercial importance from its position on the main through trade routes between India and Central Asia. (Me.)

NORTH-WEST TERRITORIES embrace all the mainland in Canada east of Yukon territory and north of the provinces of Manitoba, Saskatchewan, Alberta, and British Columbia; all the islands in Hudson and James bays and in Hudson strait, including Ungava bay; and all the Arctic islands north of the mainland of Canada within the area bounded on the east by a line passing midway between Greenland and Baffin, Devon, and Ellesmere islands, to the 60th meridian of longitude, following this longitude to the North Pole, and on the west by the 141st meridian of longitude, following this longitude to the Pole. In 1918, the Territories were subdivided, for administrative purposes, into the provisional districts of Mackenzie, Keewatin, and Franklin. The land and water area is estimated at 1,309,682sq.m. The 1931 census shows a population of 9,723, composed of 4,670 Eskimos, 4,046 Indians, and 1,007 whites.

The welfare of the native population is one of the chief responsibilities of the administration. Consequently the conservation of the wild life of the region, upon which the natives depend for subsistence, is of primary importance. An aggregate area of 514,557sq.m. has been set aside for game preserves and sanctuaries. Three thousand domesticated reindeer were purchased in Alaska in 1929 and herded overland. The herd now numbers over 4,000 head. Each year surplus animals are slaughtered and the meat made available for mission hospitals and residential schools, relief, sale, and for use at the reindeer station.

The fur trade has been for many years the most important industry in the territories and the production of furs is still the principal occupation of a large proportion of the population. For the licence year ending June 30, 1936, the number of pelts taken was 211,551 with an estimated value of $1,188,285.

In 1930 world attention was directed to the Canadian North by the discovery of pitchblende and silver deposits on Great Bear lake. During 1937 activity centred around the pitchblende-silver deposits on Great Bear lake and the gold discoveries on Outpost island, Yellowknife river, and Gordon lake, in the Great Slave lake area. In the Yellowknife and Gordon lake areas, one 100-ton mill has been installed and another is to be erected in the spring of 1938. In Dec. 1937, a rich find of gold-bearing quartz was reported from Snare river, 40m. north of Rae on Great Slave lake. There were at the end of 1937 nearly 4,000 claims in good standing in the North-West Territories. (H. A. G.)

NORWAY (*Norge*), kingdom of north-west Europe, member of the League of Nations. Bounded N. by the Arctic Ocean, E. by Finland and Sweden, S. and W. by the North Sea and Arctic Ocean. Capital, Oslo. Ruler, King Haakon VII (born 1872; elected 1905). National flag, a blue St. George's cross, white-bordered, on a red ground.

Area, Population, and Cities.—Area: 124,588sq.m.; population: (1930 census) 2,814,194; (1935 estimate) 2,884,300:

County (*Fylke*)	Area (sq. m.)	Population (1930)
Aust-agder	3,607	73,816
Vest-agder	2,794	81,233
Akershus	2,064	236,939
Bergen (town)	14	98,303
Buskerud	5,738	143,073
Finnmark	18,573	53,308
Hedmark	10,621	157,942
Hordaland	6,043	164,376
Möre	5,812	165,064
Nordland	14,728	186,920
Opland	9,608	137,710
Oslo (town)	6	253,124
Östfold	1,613	167,030
Rogaland	3,546	173,258
Sogn og Fjordane	7,135	91,808
Telemark	5,837	127,754
Troms	10,045	97,467
Nord-tröndelag	8,659	96,016
Sör-tröndelag	7,241	174,946
Vestfold	903	134,107

The Evangelical Lutheran church is State-endowed, its ministers being nominated by the King; other religious bodies are tolerated (except Jesuits), their adherents totalling (1930) only 91,459 (chiefly Methodists and Baptists).

Primary education is compulsory. Education figures (1933–34): 5,779 elementary schools with 392,482 pupils; 136 secondary, with 26,607; Oslo university, with 3,905.

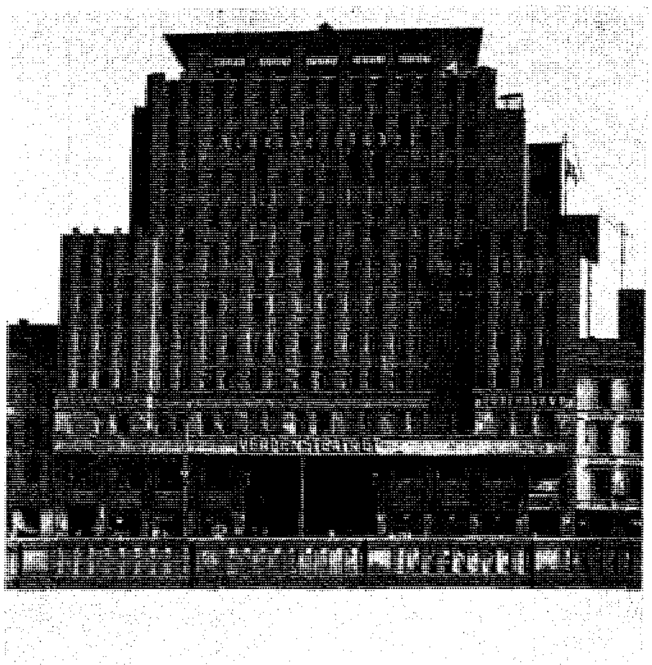
Leading towns (1930 populations): Oslo, 253,124; Bergen, 98,303; Trondheim, 54,458; Stavanger, 46,780; 5 others above 15,000.

History for the Year 1937.—The King represents the executive, the *Storting* (constitution for 1937–39: Labour, 70; Conservative, 36; Liberal, 23; Agricultural, 18; other parties, 3 = 150) the people's sovereignty; election is direct, universal, and proportional. The Cabinet consists of a prime minister (1935; Johan Nygaardsvold) and 8 others.

A prosperous year resulted in a reduction of the national debt. The Crown Princess gave birth (February) to a son (Harald—third child).

Lars Christensen discovered (February), from the air, new Antarctic territory, dropping the Norwegian flag at 38° E. long., 69° 30′ S. lat. In March, questions of neutrality and defence were discussed, and the period of annual training in the services was extended. Oslo having been the scene of origin (1930) of the Convention bearing its name, Norway took an active interest in its projected revival. Representatives of 7 States—Norway, Sweden, Denmark, Finland, Holland, Belgium and Luxemburg—met at The Hague (March), completed their deliberations in Brussels, and signed at The Hague (May) a pact in favour of continued preferential trade relations among themselves, provisionally for a year from July 1, some of them afterwards extending the concessions to non-signatories (*see* Belgium; Netherlands; Trade Treaties).

Trade, Communications, and Finance.—Less than 4 per cent. of the land is cultivatable. Yet agriculture and forestry support nearly one-third of the population, industries closely following, aided by abundance of water-power. The wealth of pyrites and iron-ore leaves some to be exported, together with paper and pulp, electro-chemical and electro-metallurgical products. Imports: 922,947,000 kroner (£46,147,000); Exports: 674,491,000 kroner (£33,725,000); both figures showed increases (1936); Great Britain takes nearly one-quarter.



Fox Photos]

OSLO: VERDENSTEATRET (THE WORLD THEATRE)

Mercantile marine (1937): 4,015 ships (4,201,120 tons). Mileage of railways (mainly State): 2,464 (1935); of roads: 24,980 (1936). Telegraphs and telephones are well developed; there are 78 wireless stations. A subsidised air-service flew (1936) 210,581 miles (4,537 passengers; 148 metric tons of goods).

The unit of currency is the *krone* (at par 18·16 kroner = £1 = $4.87). The 'Norges Bank' (joint-stock, but largely State-owned) had in circulation (1937) notes representing 400,702,000 kroner. In savings banks (1935) 2,249,288 depositors had 1,989,459,000 kroner.

Budget (1936–37): revenue, 549,000,000 kroner; expenditure, 491,700,000 kroner.

Defence Forces.—The army is a national militia, with compulsory training (extended from March to 84 days); strength (1936), 12,300 men. The navy has 4 small cruisers, other small craft, and 36 seaplanes.

Bibliography.—Fritz Meyen, *Norwegen* (Berlin, 1934); T. Vidnes, *La Norvège* (Oslo, 1934). (H. Fw.)

NOVA SCOTIA, one of the original provinces of the Dominion of Canada; area, 21,428sq.m.; population: (1931), 512,846; estimated Jan. 1, 1938, 537,000. Capital, Halifax (59,275). The only other city in the province is Sydney (23,089), which is the centre of the coal, iron, and steel industries. Of the province's population, 281,192, or 55 per cent., are rural; 507,235, or 97 per cent., are Canadian born.

The upper house of the provincial legislature was recently abolished by order in council. It was maintained that its members held office at the will of the government, and that it was within the power of the government to dismiss them at pleasure. In 1936 an Act of the provincial legislature was passed establishing a department of labour. This Act gives the department full control over all matters relating to labour, and provides for the appointment of a minister and deputy minister of labour. The latter is empowered to collect and publish information and statistics affecting labour, and to administer such Acts as may be assigned to the department by the government. At present (1938) labour bureaux in the province, the administration of the Factories Act, Minimum Wage Board, Limitation of Hours Board, Industrial Standards, and unemployment relief are under the control of the Department of Labour.

In 1937 an Act was passed authorizing wage-earners to establish unions of such kind as they desired or to join such existing unions as they chose, and forbidding any interference on the part of employers—an Act which has much in common with the Wagner Act in the United States. This and similar Acts were sponsored and passed by the Liberal government, which was again returned to office by a majority of 25 to 5 in an election held on June 29, 1937, under the leadership of the Hon. A. L. Macdonald, who is premier, provincial secretary, and treasurer of the province. The lieutenant-governor, who is appointed by the Dominion government, is the Hon. Walter H. Covert. Nova Scotia is represented in the Dominion House of Commons by 12 members, all of whom belong to the Liberal Party, and in the Dominion Senate by 10 members, who are appointed for life.

The total gross annual agricultural revenue in 1935 was $27,042,000. The value of manufactured products for the same year was $161,207,522, while for 1936 the value of mineral products was $26,569,294.

BIBLIOGRAPHY.—*The Royal Gazette, Report of the Duncan Commission.* (J. C. HE.)

NUFFIELD, WILLIAM RICHARD MORRIS, 1st Viscount (1877–), British philanthropist and motor-car manufacturer, was born in Worcester on Oct. 10, 1877. When 16 he started his own cycle-making business in Oxford, a few years later began to make motor-cycles, and in 1913, having built the first of his factories at Cowley, produced his first car, the Morris-Oxford. To-day he is at the head of companies that employ over 15,000 men and have an annual turnover of some £20 millions. In Oct. 1936, following a disagreement with the R.A.F. authorities, Lord Nuffield withdrew from the government scheme with reference to a 'shadow' industry to produce aero engines, but in Jan. 1937 formed Nuffield Mechanizations, Ltd., a private company for the manufacture of every kind of land, air, and sea armaments.

Wide World Photos]

LORD NUFFIELD

Lord Nuffield is chiefly remarkable for being—apart from John D. Rockefeller, whose benefactions were spread over a very much longer period (*q.v.*)—probably the most munificent public benefactor of recent times. Up to the end of 1936 he had given to public objects some £8 millions, of which about £2,400,000 had gone to Oxford University and its colleges, the major portion being for the promotion of medical research and its co-ordination with hospital administration; £2 millions for the betterment of the special areas; £2,125,000 as a fund by which his work-people are to become shareholders; nearly £400,000 to hospitals, health centres, etc., in London, Birmingham, Oxford, and elsewhere; £272,000 on orthopaedic treatment and research; £50,000 for the blind; £47,500 towards the erection of new churches; and £22,500 to the Motor and Cycle Trades Benevolent Fund.

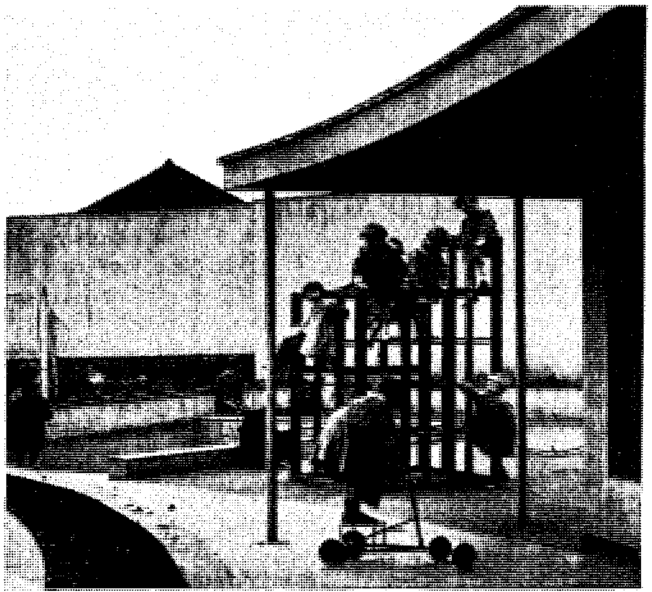
His benefactions during 1937 include £146,580 to the Birmingham Hospital Centre, to which in 1932 he had subscribed £52,000; £30,000 to the Royal Berkshire Hospital, Reading; £50,000 to Pembroke College, Oxford; £300,000 to the Radcliffe Infirmary, Oxford, supplementing his previous gift of £150,000; and to Oxford University £1 million—inclusive of a site valued at £100,000—for the endowment of a new college for the collaboration of theoretical students and practical men of affairs, together with £100,000 for a laboratory of physical chemistry and £200,000 in furtherance of the medical research scheme endowed by him in 1936. At the end of the year he gave a further sum of approximately £168,000 to provide facilities at the Oxford Medical Schools for graduate students from South Africa, Australia, and New Zealand.

Lord Nuffield was awarded the O.B.E. in 1918, was created a baronet in 1929, a baron in 1934, and a viscount in the New Year's Honours List, 1938.

NURSERY SCHOOLS. During 1937, considerable progress has been made in Great Britain in the establishment of nursery schools. In England and Wales, as against 85 schools recognized by the Board of Education in 1936, accommodating 6,335 children, there are now 96, with accommodation for 7,066. Of these, 37 are maintained by local education authorities and 59 by the State and voluntary organizations jointly. Proposals for another 40 new nursery schools are under consideration. In Scotland, there are now 23 nursery schools, of which 16 are voluntary and 7 under local education authorities. Belfast has 2 voluntary nursery schools. The Nursery Schools Committee of the Save the Children Fund has been responsible for the inauguration of 9 of the above nursery schools, accommodating 510 children, and grants have been made by them to other nursery schools.

Unprecedented space given in the popular and educational Press, resolutions passed at social, political, and educational conferences, waiting lists totalling 4,500 applicants, are indicative of the rapid development of the movement. The Nursery School Association of Great Britain expresses a considerable body of opinion in urging the provision of nursery schools as indispensable to the sound foundation of the National Health and Fitness Campaign (*q.v.*).

So far, official recognition of nursery schools has been limited to those in areas where home conditions are unfavourable and normal childhood impossible; but developments are taking place which point to a wider conception of the nursery school as the normal complement of the home and as the foundation of the national system of education. For example: (1) There is a growing demand from middle-class parents for nursery school education for their own children. (2) Where conditions are favourable, nursery classes are being established for children of three to five in connexion with infant schools. The most progressive authorities are concerned to provide in these classes the full advantages of the nursery school in staffing, open-air conditions, equipment, frequent medical inspection, and the provision of a midday meal. (3) In Bradford and the Rhondda, experiments, which promise to have far-reaching effects, are being made in the provision of nursery school conditions for children between two and seven. (4) In community centres in some of the new housing estates, as at Dalgarno Gardens and Slough, nursery schools are important features of the community.



Gas Light & Coke Co.]

THE CLIMBING FRAME OUTSIDE THE NURSERY SCHOOL, AT KENSAL HOUSE ESTATE

Europe. On the Continent, nurture of young children exercises the minds of the various governments, but it is difficult to arrive at a definite statement of numbers, since the work done in some of them includes that which in Great Britain is carried out by other agencies under the auspices of maternity and child welfare councils.

Perhaps France has led the way in arriving at a common ideal for the first stage in education in her *Écoles Maternelles,* in which, in 1936, 400,000 children were provided for.

The Save the Children International Union has established day nursery schools in Budapest which conform closely to English nursery schools, and in Spain invaluable assistance has been rendered by the Union to young children.

In Germany, the aim is stated to be the protection and full development of all children of racial value. The type of organization is designed to provide a substitute for family life to children in need of a home.

Italy attaches the utmost importance to the proper care of infancy and early childhood, and encourages the preservation of healthy family life through her well-equipped ' nest schools ' and infant schools.

There is no legal regulation of nursery schools in Holland, and the Dutch nursery school has grown into a recognized part of child education.

In Denmark, perhaps nothing exactly corresponds to the English nursery school, but the greatest care is taken in providing a healthy and happy environment for young children.

Soviet Russia.—In the U.S.S.R., in 1937, two and a half million children under eight were in properly equipped full-time nursery schools with qualified staff, including doctor and nurse, and visiting or full-time psychologist. As a temporary measure, another three and a half millions are cared for in a more primitive kind of nursery school, which contains children of mixed ages in one or two groups, under the care of untrained or short-term (eight weeks to six months) teachers. Decrees have been issued requiring the various bodies who organize nursery schools to increase their number. (S. E. D. AND G. Ow.)

United States.—In the last decade two marked developments in American nursery schools have occurred: first, a steady increase in publicly and privately supported schools under relatively permanent auspices; and, second, the establishment, as an emergency measure, of many schools under Federal support. The 1927 United States Office of Education Survey lists 76 nursery schools of the permanent type, while the 1936 report lists 285. The typical age range is two to five years. Half are in full-day session, and the remainder in half-day session. Fifty per cent. are supported by tuition, 27 per cent. by universities, 19 per cent. by philanthropic organizations, and 4 per cent. by public schools. While service for children is the primary purpose, schools also function as: research centres; demonstration centres for training teachers, workers, and nurses, and for home economics; centres for parent education and, recently, in public high schools as centres for pre-parental education. Nursery-school teachers have excellent professional training; 31 per cent. have bachelor's degrees and 41 per cent. master's or doctor's degrees. With its emphasis upon growth and development and upon children's needs and activities, the nursery school is exercising a marked effect upon the education of older children.

The emergency nursery-school programme of the Works Progress Administration is outstanding. In October 1937, 1,481 emergency schools in 48 States, the District of Columbia, and Hawaii, enrolled 40,243 children. Its main features are: extensive in-service training of teachers, who through direct contact with young children have gained insight into modern training methods; the close integration of health and nutrition services, with educational services; several experiments in adapting nursery school techniques to young children of varied racial origins and to children with physical handicaps, and a very effective programme of parent education.

In its close integration with modern research, the nursery school movement differs from earlier educational movements. As a result both its standards and its practical achievements are at a very high level.

NUTRITION. Within the past few years, knowledge of nutrition has rapidly advanced, particularly in regard to the relation of nutrition to health. This knowledge may be summarized briefly as follows:

Nutrition is the sum of the processes—respiration, digestion, absorption, circulation, assimilation, and excretion—by which the body is nourished. It consists in the ingestion, and assimilation through chemical changes, of substances with which the tissues are constructed and repaired, by which the vital processes are regulated, and from which the energy necessary for bodily activities is generated. Nutrition is thus a fundamental function of the body. By the activity proper to it, the structural integrity and functional efficiency of all organs and parts are maintained; by its means natural health is maintained.

The Essential Nutrients.—The substances with which nutrition is effected are oxygen, water, a substance or substances produced in the skin by the action of sunlight, and the digestion-products of the proteins, mineral salts, vitamins, carbohydrates, and fats contained in food. The known food-essentials are: certain amino-acids, derived from proteins; a number of inorganic elements, of which calcium, phosphorus, iron, and iodine are the most important from the point of view of practical dietetics; glucose, derived from carbohydrates (starches and sugars); linoleic acid, derived from fats; choline, the base present in lecithin; a hæmatinic factor, derived from an unknown precursor; and the vitamins.

The proteins of food are split up, within the alimentary tract, into their constituent units—the amino-acids. From these units, on their absorption, the tissue proteins are constructed. The units may be likened to the letters of the alphabet. Without certain letters—say, vowels—words and sentences, representing the tissue proteins, cannot be constructed. The food proteins must, therefore, have amongst them some that provide these 'vowel'-units in sufficient amounts. Those that do are called 'good' proteins. Their chief sources are milk, cheese, egg, meat, and, to a lesser extent, whole wheat, soya bean, nuts such as almonds, and green leaf vegetables. It is unnecessary that the protein-requirements should be met wholly, or mainly, by 'good' protein: it suffices if one-quarter to one-third be of this category.

No single foodstuff contains a sufficiency of all the food-essentials. A properly constituted diet is such a combination of foodstuffs as does provide them all in proper quantity and proportion one to another. Such a diet, admitting of great variety in meals, can be made up from the following classes of natural foodstuffs: whole cereal grains; dairy produce; green leaf vegetables; root vegetables, particularly potatoes and carrots; fruit; legumes; eggs; and, if desired, meat, including fish, fowl, and glandular organs. To these, fish oils, especially cod-liver oil, should be added in countries where sunshine is scanty.

Protective Foods.—The term 'protective foods' was originally applied to milk and green leaf vegetables, because they made good the deficiencies commonly found in human diets. Nowadays it has come to include most of the above-mentioned foodstuffs, because they are rich in one or more of the nutrients—'good' proteins, minerals, and vitamins—which protect the body against disturbance in structure or functions of its organs and parts, and sustain its resistance to infection—which protect, in short, against 'disease'.

Energy-yielding Foods.—These are the cereal grains, fats, and sugar. They are so called because they are rich in substances—starches, sugar, and fats—from which the energy necessary for vital activities is mainly generated. Refined cereals, such as white flour and polished rice, are poor in protective substances, and the more they are refined, the less is their protective power. The same may be said of refined fats. Refined sugar is devoid of protective constituents: it is of value only as a source of energy. Where energy values are equal, protective foods should always be preferred. Generally speaking, it is the sophistication of natural foodstuffs and their improper preparation for consumption that deprive them, or lower their content, of protective nutrients.

Factors Disturbing Nutrition.—Nutrition is disturbed by want of fresh air, lack of sunshine, insufficient consumption of water, insufficient food, over-eating, improperly constituted food, digestive disorder, constipation, pulmonary, cardiac, hæmic, vascular, or renal disease, insufficient rest, want of sleep, worry, lack of exercise, disuse of the adaptive functions, and infections.

Malnutrition is disorder of the function of nutrition from whatever cause arising. Its most common cause is improperly constituted food. Food may be improperly constituted, either because it contains too little of one or more of the protective substances, or too much of the energy-yielding substances relative to the protective substances, or for both reasons. Malnutrition caused in this way is spoken of as 'dietetic malnutrition'. It causes the body to react in a great variety of ways, depending on the nature and degree of the food-faults and the duration of subjection to them, on the age of the subject, the part or parts of the body affected, and the intervention—a frequent occurrence—of microbic agents of disease. These reactions, involving disturbance in structure or functions of organs or parts of the body, manifest themselves as subnormal states of health or of actual disease in great variety of form. 'Millions of people in all parts of the globe are either suffering from inadequate physical development or from disease due to malnutrition or are living in a state of subnormal health which could be improved if they consumed more or different food'. (*See* VITAMINS.)

BIBLIOGRAPHY.—R. McCarrison, *Nutrition and National Health* (Cantor Lectures, Roy. Soc. Arts, London, 1936); *Quart. Bull. Health Organization* (League of Nations, Geneva, vol. v, No. 3, 1936); Interim Report of the Mixed Committee of the League of Nations on *The Problem of Nutrition* (Geneva, 1936); Final Report of the Mixed Committee of the League of Nations on *The Relation of Nutrition to Health, Agriculture, and Economic Policy* (Geneva, 1937). (R. McC.)

NYASALAND PROTECTORATE, THE. This British protectorate in east Africa lies approximately between south lat. 9° 45′ and 17° 16′, and east long. 33° and 36°, being bounded on the east by Lake Nyasa. It is nowhere more than 100 miles in width. The governor and commander-in-chief is Sir H. B. Kittermaster, K.C.M.G., K.B.E. Zomba is the capital, and Blantyre the commercial centre.

Area and Population.—Area *c.* 37,000sq.m.; pop. 1,622,926, of whom 1,838 are Europeans and 1,558 Asiatics. Excepting a government Jeanes training centre, all education is managed by missions. There are no secondary schools, but four elementary schools for Europeans, and private schools in Blantyre and Zomba.

Trade and Communications.—Exports of fibre, soya beans, tea, and tobacco increased in 1936, beans figuring for the first time as an appreciable export. The number of registered native tobacco growers increased. Sisal estates were reopened. Coffee exports fell from 366cwt. in 1934 to 168cwt. in 1936. Total exports in 1936 were valued at £817,669, and imports at £794,089.

Communication with Beira in Portuguese East Africa is effected by Nyasaland Railways and the Central African Railway, 289m. of which lie in the territory and 24 in Portuguese territory, and by the Trans-Zambesi Railway which is wholly in Portuguese territory. Vehicles using the roads must not exceed 5 to 8 tons from June to November, and 2 tons in December to May.

Banking and Finance.—English silver and copper coins are legal tender, as also are notes issued by the Standard Bank and Barclays Bank in Southern Rhodesia, and Southern Rhodesian silver coins. There is a native hut-tax and a non-native poll-tax. Income-tax yields £131,608. Revenue for 1936 was £798,426 and expenditure £754,217. In Oct. 1937 a commission of inquiry, set up by the British government, arrived to examine the protectorate's financial system and its possible development. It was decided during the year that the tobacco crop of about 15 million lb. annually should in future be sold compulsorily by auction instead of by private treaty.

Defence.—There is a Nyasaland Volunteer Reserve. The Nyasaland Aero Club has embarked on a programme of training pilots with a view to defence. (W. M. MA.)

NYON PACT: *see* MEDITERRANEAN, THE.

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OBITUARIES. Biographies of the following men and women who died during 1937 will be found in their regular alphabetical order in this Year Book :—

Name	Date of Death
Abdulhalik Hamid, Turkish poet	Apr. 13
Adler, Alfred, Austrian psychologist	May 28
Aldrich, Richard, American music critic	June 2
Ames, Winthrop, American theatrical producer	Nov. 3
Angeli, Diego, Italian author	Jan. 23
Armstrong, Henry Edward, British chemist	July 13
Ashton, Algernon Bennet Langton, British composer	April 10
Audoux, Marguerite, French authoress	Feb.
Baker, George Fisher, American financier	May 30
Baker, Newton Diehl, American statesman	Dec. 25
Baqir Sidqi Pasha, Iraqi statesman	Aug. 12
Barrie, Sir James Matthew, Scottish playwright	June 19
Baylis, Lilian Mary, British theatrical producer	Nov. 25
Behncke, Paul, German admiral	Jan. 4
Bingham, Robert Worth, American diplomat	Dec. 18
Borden, Sir Robert Laird, Canadian statesman	June 10
Bose, Sir Jagadis Chandra, Indian physicist	Nov. 23
Bothmer, Count Felix von, German Army officer	Mar. 19
Brereton, Cloudesley, British educationist	July 11
Brother André, Canadian religious	Jan 6
Chamberlain, Sir (Joseph) Austen, British statesman	Mar. 16
Conway, William Martin Conway, 1st Baron, British art critic	April 19
Coubertin, Baron Pierre de Fredi de, originator of the modern Olympic games	Sept. 2
Cox, Sir Percy Zachariah, British administrator	Feb. 20
Craigmyle, Thomas Shaw, 1st Baron, British lawyer	June 28
Croisset, Francis de, French author	Nov. 8
Crosier, Frank Percy, British general	Aug. 31
Curé of Ypres, Belgian churchman	Jan.
Cust, Aleen Isabel, British veterinary surgeon	Jan. 29
Dalen, Gustaf, Swedish inventor	Dec. 9
Damrosch, Frank Heino, American musician	Oct. 22
Davidsohn, Robert, German historian	Sept. 18
Dewrance, Sir John, British engineer	Oct. 7
Doumergue, Gaston, French statesman	June 18
Drinkwater, John, British poet and playwright	Mar. 25
Eames, Wilberforce, American bibliographer	Dec. 6
Earhart, Amelia, American airwoman	July 2
Edwards, Alfred George, Welsh churchman	July 22
Erman, Adolf, German Egyptologist	June 26
Ernle, Rowland Edmund Prothero, 1st Baron, British agriculturist	July 1
Filene, Edward Albert, Boston merchant	Sept. 26
Foote, Arthur William, American organist and composer	April 9
Forbes-Robertson, Sir Johnston, British actor	Nov. 6
Franklin, Edward Curtis, American chemist	Feb. 13
Gallwitz, Max von, German soldier	April 19
Gardner, Percy, British archaeologist	July 18
Gay, Walter, American painter	July 15
Geddes, Sir Eric Campbell, British industrialist	June 22
Gershwin, George, American composer	July 11
Gillette, William Hooker, American actor	April 29
Gleichen, Lord Edward, British soldier	Dec. 15
Glenravel, Arthur Shirley Benn, 1st Baron, British industrialist	June 13
Gordon, Charles William, Canadian author	Oct. 31
Greenough, Robert Battey, American surgeon	Feb. 16
Guest, Frederick Edward, British politician	April 28
Hadley, Henry Kimball, American composer	Sept. 6
Hadow, Sir (William) Henry, British musician	April 9
Hafid, Mulai, ex-Sultan of Morocco	April 4
Häften, Hans von, German historian	June 9
Haldane, Elizabeth Sanderson, English author	Dec. 24
Halévy, Elie, French historian	Aug. 21
Halliday, Sir Frederick Loch, British police officer	Jan. 13
Hapgood, Norman, American editor	April 29
Harlow, Jean, American motion picture actress	June 7
Haskins, Charles Homer, American historian	May 14
Hocking, Joseph, British author	Mar. 4
Hodge, John, British trade union leader	Aug. 10
Hornaday, William Temple, American zoologist	Mar. 6
Horniman, Annie Elizabeth Frederika, British theatrical producer	Aug. 6
Hubay, Jenö de, Hungarian violinist and composer	Mar. 12
Hughes-Stanton, Sir Herbert, British artist	Aug. 2
Hunter, Sir George (Burton), British shipbuilder	Jan. 21
Isherwood, Sir Joseph William, British ship designer	Oct. 24
Ives, Frederick Eugene, American inventor	May 27
Jacobi, Hermann, German scholar	Oct. 20
Jinvara, Prince, Siamese prince	Aug. 25
Johnson, Martin Elmer, American explorer	Jan. 13
Kellogg, Frank Billings, American statesman	Dec. 21
Kellogg, Vernon Lyman, American zoologist	Aug. 8
Knox, Edmund Arbuthnott, English churchman	Jan. 16
Kramar, Karel, Czechoslovakian statesman	May 26
Kylsant, Owen Cosby Philipps, 1st Baron, British shipowner	June 5
László de Lombos, Philip Alexius, British artist	Nov. 22
Legouis, Émile, French critic	Oct. 16
Lehmann, Ernst August, German aviator	May 7
Lemieux, Hon. Rodolphe, Canadian statesman	Sept. 28
Lorimer, George Horace, American journalist	Oct. 22
Ludendorff, Erich, German general	Dec. 20
Lustig, Alessandro, Italian pathologist	Sept. 24
MacDonald, James Ramsay, British statesman	Nov. 9
MacMonnies, Frederick William, American sculptor	Mar. 22
McNeile, Cyril, Lieut.-Colonel (' Sapper '), British author	Aug. 14
Mallaby-Deeley, Sir Harry, British industrialist	Feb. 5
Marconi, Marchese Guglielmo, Italian inventor	July 20
Marquis, Donald Robert Perry, American author	Dec. 29
Masaryk, Thomas Garrigue, Czechoslovakian statesman	Sept. 14
Masood, Sir Syed Ross, Indian Moslem educationist	July 30
Mayo, Admiral Henry Thomas, American sailor	Feb. 23
Mellon, Andrew William, American statesman	Aug. 26
Mills, Ogden Livingston, American statesman	Oct. 11
Mola, General Emilio, Spanish soldier	June 3
More, Paul Elmer, American critic	Mar. 9
Morrow, Jay Johnson, American soldier	April 16
Nogales, Rafael de, Venezuelan soldier	Sept.
Norris, William Foxley, English churchman	Sept. 28
Ogden, Rollo, American journalist	Feb. 22
Olaya Herrera, Enrique, Colombian statesman	Feb. 18
Ordjonikidze, Grigori Konstantinovich, Soviet politician	Feb. 18
Page, Thomas Walker, American economist	Jan. 13
Paine, Albert Bigelow, American author	April 9
Peel, William Robert Wellesley Peel, 1st Baron, British statesman	Sept. 28
Philpot, Glyn Warren, British artist	Dec. 16
Pierné, Henri Constant Gabriel, French composer	July 17
Pollock, Sir Frederick, British jurist	Jan. 18
Ras Desta, Ethiopian chief	Feb. 24
Ravel, Maurice, French composer	Dec. 28
Robinson, Joseph Taylor, American politician	July 14
Rockefeller, John Davison, American capitalist	May 25
Root, Elihu, American lawyer	Feb. 7
Rose, Sir (Hugh) Arthur, Scottish educator	Aug. 14
Rothschild, Lionel Walter Rothschild, 2nd Baron, British zoologist	Aug. 27
Roussel, Albert, French composer	Aug. 24
Rubio i Lluch, Antoni, Spanish Catalan scholar	June 9
Runciman, Walter Runciman, 1st Baron, British shipowner	Aug. 13

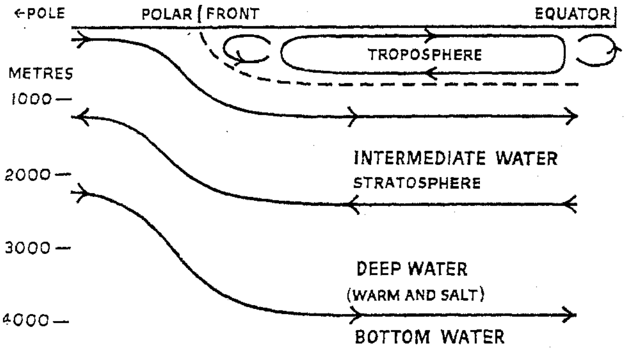
Name	Date of Death	Name	Date of Death	Name	Date of Death
Rutherford, Ernest Rutherford, 1st Baron, British physicist	Oct. 19	Somervell, Sir Arthur, British composer	May 2	Tukhachevsky, Mikhail Nikolaevich, Russian marshal	June 12
Samuel, Harold, British pianist and composer	Jan. 15	Stevenson, James Alexander, British sculptor	Oct. 5	Uriu, Baron Sotokichi, Japanese admiral	Nov. 11
Semple, Sir David, British bacteriologist	Jan. 7	Stewart, Sir Halley, British sociologist	Jan. 27	Vardon, Harry, British golfer	Mar. 20
Shannon, Charles H., British artist	Mar. 18	Stieglitz, Julius Oscar, American chemist	Jan. 10	Varnava, Serbian patriarch	July 24
Sheppard, Hugh Richard, English churchman	Oct. 31	Strathcarron, Ian Macpherson, Scottish statesman	Aug. 14	Warburg, Felix M., American financier	Oct. 20
Simons, Walther, German politician	July 15	Swift, Sir Rigby, British jurist	Oct. 19	Welldon, James Edward Cowell, English churchman	June 17
Smith, Annie Lorrain, British botanist	Sept. 7	Szymanowski, Karol, Polish composer	Mar. 29	Wharton, Mrs. Edith Newbold Jones, American novelist	Aug. 11
Smith, Sir Grafton Elliot, British anthropologist	Jan. 1	Tanner, Henry Ossawa, American negro painter	May 25	White, Maude Valerie, British composer	Nov. 2
Smyth, Herbert Weir, American scholar	July 16	Thomson, Elihu, American inventor	Mar. 13	Widor, Charles-Marie, French composer	Mar. 12
Snowden, Philip Snowden, 1st Viscount, British statesman	May 15	Thomson, John Gordon, British scientist	Aug. 13	Wise, Thomas James, British bibliographer	May 13
		Tonks, Henry, British artist	Jan. 8	Zachrisson, Robert Eugen, Swedish scholar	July

OBSTETRICS : *see* GYNAECOLOGY AND OBSTETRICS.

OCEANOGRAPHY. Being a comparatively young science, at least on its geophysical side, oceanography is still largely in the descriptive stage. Observations are difficult and expensive to get, and progress is consequently slow, though helped by parallelism, when it exists, with certain problems in meteorology.

General interest is centred chiefly on the identification of oceanic water masses and their movements. This year the *Discovery II* (Great Britain) completed her fourth commission in the Southern Ocean (*Discovery Reports*, Camb. Univ. Press). The *Meteor* (Germany) has begun her survey of the north Atlantic with a four months' cruise off Cape Verde. Since her survey of the south Atlantic in 1925–27 (*Wiss. Ergebn. Deutschen Atlantischen Exped. ' Meteor,'* 1925–27), she has made four cruises in the Denmark Strait region. The reports are published of the *Marion* and *General Greene* (United States) expeditions (between 1928 and 1935) to the Labrador Sea, and of the *Atlantis* (United States) expeditions in 1933 and 1934 to the Caribbean and Cayman Seas. The work of the latter ship in the north-western north Atlantic was reported last year (*Papers Phys. Oceanogr. Meteorol.*, Woods Hole Oceanogr. Inst., IV, 4, 1936). Most of the countries bordering the north-eastern north Atlantic (countries belonging to the International Council for the Exploration of the Sea) contribute data for waters between Portugal and Greenland, and the U.S.S.R. have worked in the Kara Sea. Hydrological observations are made from their station on the ice, which has drifted rather rapidly from the Pole roughly along the meridian of Greenwich. Regular observations are made by Japan in the adjacent seas, which have helped to furnish data for comparison of the Kuroshio and the Gulf Stream. The latter is evidently a much more important feature of the Atlantic than the former is of the Pacific.

The most important result of recent studies is the recognition of certain broad features common to the three great oceans. The hydrosphere is divided into two primary regions, termed (borrowing from meteorology) the troposphere and stratosphere ; they are separated by a thermocline in the depths (500–1,000 metres) and the polar convergences (' fronts ') in roughly 50° latitude, the stratosphere lying beneath, and polarwards of the troposphere. The circulations in these regions are distinct, the exchange taking place through the boundaries being small. The diagram shows, schematically, the meridional distribution of the water masses. The position of the Antarctic convergence has been mapped, and appears to change little. It has also been found that, while the relative position of the water masses is similar all round the Antarctic continent, the bulk of the bottom water is formed in the Weddell Sea, whence it moves eastwards and northwards.



MERIDIONAL DISTRIBUTION OF THE WATER MASSES

The dynamical methods, based on Bjerknes's theorem, used for calculating current-speeds, appear inadequate sometimes to account for all the motion, possibly when there are strong vertical components. These methods have the general limitation, too, that to get absolute velocities, reference surfaces in which the motion is known—or nil—are required. The selection of suitable datum surfaces is one of the chief difficulties.

Experimental studies are being made of the dynamics of ocean currents, mainly in relation to diffusion processes, internal waves, adjustment of velocity to pressure gradients, etc. In narrower waters, considerable success has been attained in distinguishing water masses by their plankton, and by their content in various salts. It has been observed that in recent years, concurrently with an increase in atmospheric circulation, there has been a considerable extension of the influence of the Gulf Stream towards the Pole. Not only in the Arctic has the water temperature increased, but the effect is felt even in the English Channel, the rise being about 0·5° C. On the chemical side, the greatest achievement has been the work on the calcium carbonate equilibrium. This is now one of the best understood systems in the sea. (J. R. L.)

OFFICERS TRAINING CORPS : *see* TERRITORIAL ARMY.

OGDEN, ROLLO, American journalist ; born at Sand Lake, N.Y., Jan. 19, 1856 ; died in New York, Feb. 22,

1937. Having graduated from Williams College in 1877, he was in 1881 ordained to the Presbyterian ministry. In 1891 he joined the editorial staff of *The New York Evening Post,* his attacks on Tammany Hall aiding the election of reform officials in 1894 and 1901. As editor, 1903–20, he advocated civil service reform, woman suffrage, industrial legislation, and co-operation for world peace. This work he continued as editor, 1922–37, of *The New York Times.*

OHIO : *see* United States of America.

OKLAHOMA : *see* United States of America.

OLAYA HERRERA, ENRIQUE, Colombian statesman; born at Guateque, Nov. 12, 1881; died in Rome, Feb. 18, 1937. Starting life as a journalist, he founded in succession *El Patriota, Gaceta Republicana,* and *Diario Nacional.* In 1910 he became a member of the National Assembly, and, after serving as minister of foreign affairs, became minister to Chile in 1912 and to Argentina in 1913. During 1917–18 he was vice-president of the Chamber of Deputies, and during 1920–21 senator from the department of Tolina. As minister of foreign affairs in 1921, he induced the Colombian Congress to ratify the $25 millions treaty settling the difficulties between Colombia and the United States over the Panama Canal which had been pending since 1903. As minister to the United States (1922–28), he took an active part in promoting better understanding between the two Americas. As President of Colombia, 1930–34, he won such confidence that Colombia was one of the few South American countries to escape revolution during the depression period. To meet the emergency, Congress conferred on him powers amounting virtually to a financial dictatorship.

OMAN : *see* Arabia.

ONTARIO is one of the original provinces of the Dominion of Canada; area, 412,582sq.m.; population: according to the Dominion census of 1931, 3,431,683; estimated Jan. 1, 1938, 3,690,000. Capital, Toronto (631,207). Of the province's population 2,095,992, or 61 per cent., are urban; 2,794,631, or 81 per cent., native born.

The Industrial Standards Act of Ontario provides that the minister of labour, upon petition of representatives of the employers or employees in any industry, may convene a conference or series of conferences of employers and employees in that industry, in any zone or zones, to investigate the conditions of labour in such industry and to negotiate standard hours of labour and rates of pay. If the minister is satisfied that an agreement in writing has been reached, he may approve it, and such agreement shall be in force 'during pleasure' or for a period not exceeding one year. Such agreement may also be made binding upon the industry throughout the province. The Minimum Wage Board has authority to enforce the provisions of the Act.

Much attention has been directed to the policy of the government of Ontario in supplying cheap light and power to the people of the province through the publicly owned and controlled Hydro-electric Power Commission. The Commission provides electric services to towns in the province, as well as many small communities and local areas. The actual distribution within a municipality is performed by the municipality itself, under the supervision of the Commission. The capital of the Commission and Municipal Utilities amounts to $408,100,000; reserves $148,474,209. Rates are low, and the service is excellent. The net value of the total production of the province in 1934 was $1,025,262,177, an increase of 25 per cent. over the preceding year. The gross annual agricultural revenue in 1935 was $313,077,000; from mineral products for 1936, $184,543,853.

The provincial election of 1937 resulted in the return to power of the Liberal Party, under the leadership of the Hon. Mitchell Hepburn. The Party standing of the Provincial Legislature comprises 63 Liberals, 23 Conservatives, and 4 Independents. The lieutenant-governor is the Hon. Albert Matthews. Ontario is represented in the Dominion Parliament by 24 senators, appointed for life, and 82 members of the House of Commons, elected for a term of five years or less.

Bibliography.—*Annual Report of the Department of Labour*; *Statistical Year-Book of Ontario*; *Annual Report of the Hydro-Electric Commission.* (J. C. He.)

ORANGE FREE STATE, THE, an original province (1910) of the Union of South Africa, annexed by Great Britain in 1900, as the Orange River Colony, during the South African War of 1899–1900, and lying between the Transvaal on the north and the Cape Colony on the south. Area, 49,947sq.m.; population (1936), 771,854, made up of 200,947 Europeans, 553,156 natives, 29 Asiatics, and 17,722 coloured. Bloemfontein (pop. 39,000) is the provincial seat of government.

The country is mainly pastoral, but wheat-farming is carried on increasingly; apart from diamonds, which in 1935 yielded over £32,518,000, mining is not extensive, gold production in that year amounting to £16,600, and coal to £7,307,300. Primary and secondary education, administered by the province, is given in 620 European public and private schools and about 300 schools for non-European children; higher education is in the hands of the Union government.

The total revenue for 1935–36, including Union subsidy, was £1,586,600, and the expenditure £1,566,700. For further particulars and history, *see* South Africa, Union of.

ORDJONIKIDZE, GRIGORI KONSTANTINOVICH, Russian politician; born of a Georgian family in 1886; died in Moscow, Feb. 18, 1937. He joined the Bolshevist Party when only 17, and four years later was exiled to Siberia, but escaped to Paris. Returning to Russia about 1912, he was again exiled to Siberia, where he met Stalin. After the Bolshevists came into power, he served as special commissar for the Ukraine, and was, for a time, president of the Caucasus Revolutionary Committee. On Stalin's assumption of leadership following Lenin's death, Ordjonikidze became a member of the Political Bureau of the Central Executive Committee. He was one of the principal organizers of the first Five-Year Plan, and served as chairman of the Supreme Economic Council and, later, as commissar for heavy industries.

ORDNANCE SURVEY. This department maintains the national maps, and performs a number of services connected with maps for other public departments in Great Britain. In recent years it has become plain that the work of government cannot be carried on without detailed, accurate, and up-to-date maps. Much legislation has been enacted recently which can hardly be put into operation without such a foundation. During the year 1936–37, a large part of the resources of the Ordnance Survey has been concentrated on the revision of plans required to enable local authorities to carry out the provisions of the Town and Country Planning Act. Increases in the staff of the department have been made in order to accelerate this work, but there has not yet been time for these increases to have any considerable effect on output.

Experimental air surveys have been continued, with photographs taken by contract, but difficulties have been experienced by the contractors in completing the contracts owing to bad weather and other causes. The experiments are intended to show, firstly, whether and where air photographs will be useful for $\frac{1}{2500}$ scale revision, and secondly, whether the accuracy of air photographic methods is sufficient to enable a tertiary triangulation to be dispensed with. For the latter purpose special apparatus has been designed and is being tested.

The new triangulation, started in 1935, has been pressed forward. The existing triangulation of the Ordnance Survey, completed 70 or 80 years ago, and admirable in many respects, is now neither sufficient nor entirely suitable for current requirements. In particular, many of the primary rays are too long for observation in the polluted atmosphere of central England, and many of the stations, marked by buried stones, cannot now be found. A new triangulation network is therefore being established, of which the stations are being marked by concrete pillars. The primary network has now been completed for about two-thirds of the country. Eventually it is intended to cover the whole country with a network of triangles of about four-mile sides. The points will be available for the co-ordination of mining and similar localized instrumental surveys, and will be used for the maintenance and better co-ordination of the $\frac{1}{2500}$ scale survey generally.

Another research item of interest and promise is the search for a substitute for paper on which to make manuscript map drawings. Paper expands and contracts very considerably with changes in atmospheric humidity. This introduces appreciable errors into the map, and causes many other difficulties. The discovery of a really satisfactory substitute free from these drawbacks would be of the utmost value to the Survey. Satisfactory results are said to have been obtained by drawing on enamelled metal sheets; corrections are easy to make, and additions to the manuscript drawing can be made mechanically, since it is possible to cover the plates with light-sensitive solutions of various kinds, a procedure that is impracticable with paper.

Further items of interest are an experimental machine intended to replace hand-typing, and the activities of the Boundary and Archaeology Sections.

The net cost of the Department has gone up by nearly £94,000 as compared with the previous year, and a further increase by about another £120,000 has been authorized for 1937–38. This is the price of the increases in staff recommended by Lord Davidson's Departmental Committee in 1935. It cannot be called excessive for the valuable, and indeed indispensable, work of this unique but progressive Department. (M. N. M.)

ORISSA. This Indian province was separated from its parent province of Bihar by the Act of 1935, and has now a governor (Sir John Hubback since its inception in April 1936) and a legislature of its own. The assembly is composed of 60 members, the majority belonging to the Congress Party, and the cabinet consists of three ministers, Mr. Bishwanath Das being the chief. The capital is to be established at Chowdwar, an extension of Cuttack (pop. 65,263), the only town of any size. Separate statistics for the new province are not yet available. The population is almost entirely Hindu, the language is Oriya, and the tract is wholly agricultural, with occasional deposits of iron-ore and manganese. Including certain small feudatory tracts and the odd pieces of territory transferred from Madras and the Central Provinces, the area is about 32,000sq.m., and the population about 8½ millions. (ME.)

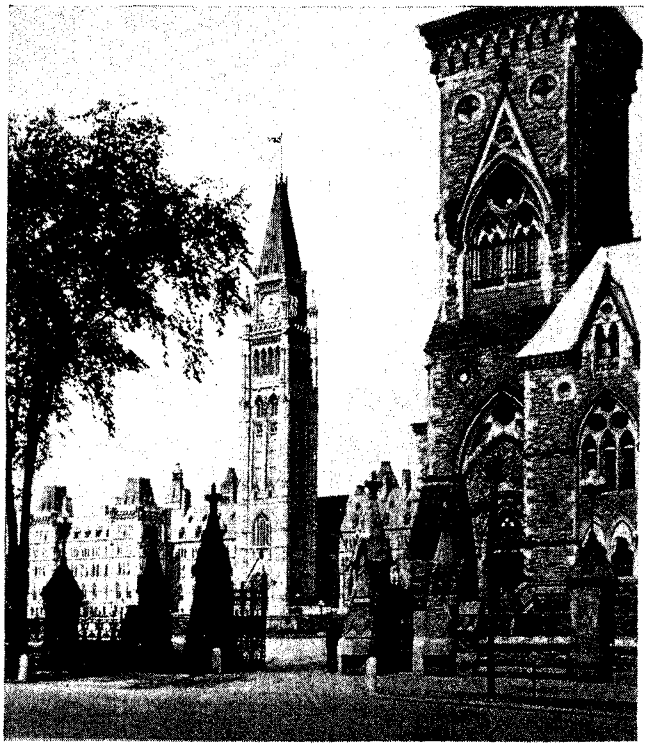
OREGON: *see* UNITED STATES OF AMERICA.

ORTHODOX CHURCHES: *see* EASTERN ORTHODOX CHURCHES.

OSLO CONVENTION: *see* TRADE TREATIES.

OTTAWA, the capital of the Dominion of Canada, is situated on the Ottawa river, in the province of Ontario. Directly across the river is the city of Hull, in the province of Quebec. The population of Ottawa is 126,872; of the metropolitan district of Ottawa 175,988.

It will be noted that Ottawa, although the capital of Canada, is not situated in a Federal district, but is wholly self-governing, subject, of course, to the condition that it obtains its charter from Ontario, of which it is an integral part. There is a growing feeling at the present time that Ottawa and its environment should be under Federal jurisdiction. This point of view is supported by the fact that a very considerable part of the real property in the city is owned by the National government, and also by the fact that the National government has spent large sums of money in beautifying the city by establishing and maintaining parks and driveways. Ottawa is an important manufacturing centre of wood and its products. The gross value of manufactured products in 1937 was $25,406,000. The gross postal revenue in 1937 was $1,026,500. Its most important educational institution is the Université d'Ottawa.



Canadian Official News Bureau]

PEACE TOWER FROM EAST GATE; PARLIAMENT BUILDINGS, OTTAWA, ONTARIO, CANADA

BIBLIOGRAPHY.—*The Canada Year-Book*; *Handbook of the City of Ottawa.* (J. G. HE.)

OXFORD GROUP, or First Century Christian Fellowship, a religious movement founded in 1921 by Dr. Frank N. D. Buchman, a Lutheran minister (born Pennsburg, Pa., June 4, 1878). The Group, as inaugurated, has had no defined membership or organization. Anywhere and at any time, persons inside or outside the churches may meet as 'a group', with the utmost freedom of opinion and association. Such groups are to be found in many countries. According to the belief and practice of the Group, the life of the individual may be 'changed' and brought under 'God Control', interpreted as adjustment to circumstances, guidance in decisions, a deepening sense of obligation to others, and the 'sharing' of experience. The public meetings of the Group are devoted largely to such testimony. The movement is especially successful in Great Britain, South Africa, and the Scandinavian countries.

OXFORD UNIVERSITY. In recent years the recognition of the educational value of new subjects, together with the greater specialization of research, has led to certain related developments in the university. The problem of administration has been to foster these developments without prejudice to the traditional disciplines.

In 1937 there were 4,920 students in residence (4,057 men and 863 women), some of whom were reading for diplomas, research degrees or pass schools, or were special classes of students, such as civil service probationers. Less than 200 were reading for pass schools.

Since 1931, research students have increased from 240 to 398. The biggest percentage increases are in Literae Humaniores ('Greats') (20–41), Social Studies (12–41), and Oriental Languages (3–13).

Buildings.—The most significant new university (as apart from college) buildings undertaken or projected since 1926 are: (*a*) extensions of the Ashmolean Museum of Art and Archaeology, the Taylor Institution (modern language libraries and lecture-rooms), the Bodleian Library, including the Radcliffe Science Library; (*b*) new laboratories for physics, physical chemistry, and geology, and (*c*) new quarters for St. Catherine's Society.

Benefactions.—These include gifts for the extension of the Bodleian Library (of nearly £600,000), for the Ashmolean Museum, and for archaeological studies. The outstanding gifts in recent years have been £2,200,000 and £1 million respectively from Lord Nuffield for the Medical School and for a post-graduate college, devoted especially to social studies. In 1937, a special appeal raised over £420,000, of which £250,000 completes the endowment of the Bodleian extension. (D. V.)

DISTRIBUTION OF STUDENTS TAKING FINAL SCHOOLS

Final Honours School	MEN			WOMEN	
	1914	1922	1937	1922	1937
Literae Humaniores	141	144	119	6	12
Mathematics	17	26	33	—	4
Physics	9	23	20	2	1
Physiology	28	50	54	4	6
Chemistry	33	78	54	1	1
Zoology	3	4	10	2	3
Botany	7	8	3	1	4
Geology	3	7	6	—	—
Engineering Science	9	27	8	—	—
Jurisprudence	100	135	128	2	3
Modern History	193	343	236	43	52
Theology	49	67	59	1	1
Oriental Studies	3	4	3	—	—
English	13	74	64	49	61
Modern Languages	18	51	80	15	59
Philosophy, Politics, and Economics	—	—	120	—	25
Geography	—	—	17	—	14

Fox Photos

THE HIGH, OXFORD.

P

PACIFIC ISLANDS, BRITISH. (*See* also Fiji; Pacific Islands, Mandated; New Guinea; New Hebrides; New Zealand; Samoa.) British possessions in the Pacific Ocean, apart from the Eastern dependencies, include the groups listed below and many smaller islands. They are governed under a high commissioner for the Western Pacific, who is also governor of Fiji; the present high commissioner is Sir A. F. Richards, K.C.M.G.

The British Solomon Islands Protectorate comprises Guadalcanar, Malaita, San Cristoval, Isabel, Choiseul, New Georgia and other islands (including the Santa Cruz group), east of New Guinea, between latitudes 4° S. and 13° S. and longitudes 155° E. and 170° E. Administrative capital, Tulagi. Total land area, 15,000sq.m. Population (1931): 497 Europeans, 193 Asiatics, 93,415 natives. Revenue (1935–36), £58,465; expenditure, £49,224. Exports (1935–36), £198,358, mostly copra and trochus shell; imports, £150,163.

Gilbert and Ellice Islands Colony includes the Gilbert group (between 4° N. and 3° S. lat. and 172° E. and 177° E. long.), the Ellice group (between 5° S. and 10½° S. lat., and 176° E. and 179½° E. long.), Ocean Island (seat of government, lat. 0° 52′ S., long. 169° 35′ E.), Fanning Island (lat. 3° 30′ N., long. 159° 13′ W.), and Christmas Island (lat. 2° N. and long. 157° W.). Population: Gilbert Island (1936), 92 Europeans, 26,153 others; Ellice Island (1935), 1 European, 4,220 others; Ocean Island (1936), 195 Europeans, 495 Asiatics, 1,992 others; Fanning Island (1936), 42 Europeans, 272 others; Christmas Island (1927), 5 Europeans, 18 others. Total area, 204sq.m., excluding Christmas Island, which is an atoll 100m. in circumference. Revenue of the colony (1934–35), £52,922; expenditure, £53,983. Exports (1935), £340,068, chiefly phosphates and copra; imports, £117,060.

The Tonga Protectorate (the Friendly Islands) lies between 15° S. and 23° 30′ S. lat., and 173° W. and 177° W. long. Ruler, Queen Salote. Seat of government, Nukualofa. Area, 250sq.m.; population (1936), 342 Europeans, 499 half-castes, 31,604 Tongans. Revenue (1935–36), £66,660; expenditure, £49,904. Exports (1936), £116,539, mostly copra; imports, £92,296.

The Phoenix Islands lie between 2° 30′ S. and 4° 30′ S. lat., and 171° W. and 174° 30′ W. long. Area, 16sq.m.; population, 59.

Pitcairn Island lies in lat. 25° 4′ S., long. 130° 8′ W. Area, 2sq.m. Pop. (1936), 202, descendants of the mutineers of H.M.S. *Bounty.*

Great Britain reaffirmed, in Aug. 1937, the annexation of three uninhabited islands in the Pacific, valuable as air ports or bases: Henderson Island, north-east of Pitcairn; and Ducie and Oeno, north of Pitcairn. (H. V. H.)

PACIFIC ISLANDS, FRENCH. The most important of these are New Caledonia and Tahiti.

New Caledonia has area 8,548sq.m., and pop. (1931) 57,164 (28,500 Polynesian and Melanesian). The capital is Nouméa (10,700). The governor is B. Siadous, appointed 1933. Economic activity improved slightly in 1937, and exports of frozen meat, copra, coffee, etc., are increasing. 9,884,000 acres pasture, 11,119 acres copra, and 8,648 acres coffee are under cultivation. The development of mining has necessitated the immigration of coolies from Annam and Java. On March 25, 1937, the French government introduced a bill to the effect that a deputy should be elected by New Caledonia.

Tahiti has area about 600sq.m., and pop. (1931) 16,781. The biggest town is Papeete (7,061). The governor, since 1935, of the islands of which Tahiti is the most important, is H. Sautot. Exports of copra, phosphates, and vanilla have increased slightly. A rather serious social problem is raised by the presence of a too large and not easily assimilable Chinese colony. (*See* also New Hebrides.)

PACIFIC ISLANDS, MANDATED, being the former German possessions in the western Pacific, comprise part of New Guinea (*q.v.*) with adjacent archipelagos, western Samoa (*q.v.*), the Marshall, Caroline, Palau, and Ladrone or Marianne Islands (all north of the equator, and administered by Japan as mandatory), and the islet of Nauru, the mandate for which is held jointly by the United Kingdom, Australia, and New Zealand.

The Japanese Mandate.—The Marshall Islands comprise 24 islands, the chief of which is Jaluit, the seat of government. Population (1933): 433 Japanese, 9,868 natives, 10 others. The Carolines, including the Pelew or Palau Islands, consist of about 549 islets, the seats of government being Palau and Yap (western group) and Truk and Ponapé (eastern group). Population (1934): 7,213 Japanese, 30,272 natives, 69 others. The Marianne or Ladrone group consists of 14 islands (24,359sq.m.). The seat of government is Sipan. Population (1935): 19,835 Japanese, 49,695 natives. Estimated revenue and expenditure of all the Japanese mandated islands in 1935–36 was yen 5,978,000.

Nauru lies 26m. south of the equator, in long. 166° E. Area: 5,396 acres. Population (1936), 179 Europeans, 1,647 Nauruans, 4 other islanders, 1,092 Chinese. Administrator, Commander R. C. Garsia, R.A.N. Revenue (1935), £23,487; expenditure, £20,666. In 1936, 826,379 tons of phosphates were exported; imports (1935) were valued at £168,595. (H. V. H.)

PACIFISM. Pacifists may be defined as those who believe that means determine ends and that peace cannot be achieved by methods of violence. They therefore feel bound to exclude from their work for a war-less world plans for 'collective security', an international police force, and economic coercion. They are the teetotallers of the peace movement.

During 1937, pacifism was chiefly brought to the notice of the public in Great Britain through the growth of the Peace Pledge Union. This body arose from the suggestion, made in 1934 by the late Canon H. R. L. Sheppard, that those who could sign a pledge 'I renounce war and will never support or sanction another', should send him a postcard. The response was so great, that some kind of organization of signatories became inevitable. At the end of 1937, the membership, organized in 745 groups, consisted of 140,000 individuals, 25 per cent. of whom were women recently admitted. This total takes into consideration a drastic winnowing of names during the year, for a good many who had taken the pledge realized later—largely because of the civil war in Spain or the call for a boycott of Japanese goods after the invasion of China—that they could not accept the full pacifist position.

The death of 'Dick' Sheppard, on Oct. 31, 1937, just after he had won the Lord Rectorship of Glasgow University on the full pacifist ticket, was a severe blow to the whole pacifist movement. But the immediate result was a large increase in the number of pledges received. *Peace News*, the weekly organ of the P.P.U., attained a circulation of 15,000 copies a week during the year. In the spring the P.P.U. absorbed the older No More War Movement.

The growth of the pacifist movement in the Christian churches was evidenced by the congress at Edinburgh in the summer of the Ministers' International Peace Union, attended by clergy of many countries. The Council of Christian Pacifist Groups, composed of representatives from pacifist organizations in the Anglican, Roman Catholic, and Free Churches, steadily became stronger; and one of the constituent bodies, the Methodist Peace Fellowship, includes 749 pacifist ministers. The council is the outcome of the activities of the Fellowship of Reconciliation, an interdenominational pacifist body formed in 1914. From the latter has also grown the American F.O.R. and the International F.O.R., with an office in Paris and considerable work in Europe.

From the wider movement have emerged the Embassies of Reconciliation. The outstanding activity of this body has been the visits of Mr. George Lansbury to Herr Hitler, Signor Mussolini, and the presidents and premiers of Czechoslovakia, Poland, and Austria. Earlier, he had had similar interviews with President Roosevelt, M. Blum, M. Van Zeeland, and the ministers of the Scandinavian countries.

The purpose of these visits was to win support for a proposal for a conference of the principal nations for the reconstruction of economic relations as the most practical contribution to general appeasement.

The pacifist movement recognizes that pacifism is a positive way of life and must have a constructive programme for the removal of injustice and conditions which lead to international friction, rivalry, and war. At big conventions held in London, Manchester, Birmingham, and other centres, arranged by the Parliamentary Pacifist Group, delegates from the pacifist bodies not only registered opposition to rearmament, but stressed the need for a reorganization of the League of Nations with an authority derived from world public opinion, making it an instrument for instituting international control of undeveloped areas and for a planned world production.

Constructive pacifism was also exemplified by the exploration of the possibilities of conciliation between the opposing parties in Spain, and between Jews and Arabs in Palestine (the Peace Army and individuals engaging particularly in the latter); by relief work on both sides in the Spanish civil war; and by such activities as those of the International Voluntary Service for Peace. Small international groups of members of the I.V.S.P. engaged in reconstruction work in Bihar, India, after an earthquake; in a Swiss area ruined by an avalanche; and in reconditioning work in English 'depressed' areas.

Though the World Conference of the Churches on 'Church, Community and State', held at Oxford in July, was not able unitedly to take the absolute pacifist position, its report included, not only a statement of the pacifist's faith, but also an italicized denunciation of war as 'a defiance of the righteousness of God'. Moreover, the Message of the Conference stated, 'The Universal Church . . . must pronounce a condemnation of war unqualified and unrestricted'.

A report on the Church's attitude to peace and war, presented to the 1937 General Assembly of the Church of Scotland, included a minority report clearly putting forward the pacifist case.

In the United States, the work begun in the Emergency Peace Campaign in 1936 was continued with considerable success. The American War Resisters' League attained a membership of over 15,000, and a stand was made against military training in colleges. A movement similar to the P.P.U. began in Canada, and there was considerable peace propaganda in the other British Dominions. An all-Ireland anti-war crusade on a full pacifist basis was started at the beginning of the year.

At the conference of the War Resisters' International at Copenhagen in July, it was stated that this body was carrying on work in 68 countries. At that date, over 400 men were known to be in concentration camps or prisons in France, Germany, Poland, Russia, Italy, Bulgaria, Switzerland, and elsewhere, for refusing military service on conscientious grounds. In the Scandinavian countries and Holland, there is some form of civil alternative service which, however, not all the conscripted 'objectors' feel able to accept.

As the result of a conference in Paris, attended by 300 delegates, the International Pacifist Association was formed.

Members of the Society of Friends are to be found as active workers in all sections of the peace movement in Great Britain, America, and elsewhere. The Society itself has its peace committees, and seeks also to express its Christian pacifist principles through relief work and through the Quaker centres in several of the capitals of Europe and elsewhere. It is hoped that Shanghai may soon be added to the list.

Pacifist literature in English-speaking countries during 1937 was strongly reinforced by important books by Aldous Huxley and others. Peace bookshops supplemented the platform and street-corner propaganda of pacifism. The movement in Britain made clear its opposition to rearmament, which it believes to be a danger to peace. It also opposed the air-raid precaution measures, because they foster the spirit of fear and of suspicion of other countries, and because they set up 'a discipline for defence', potentially dangerous to civil liberty. A growing, though still small, number of individuals refused to pay that proportion of their income-tax representing a contribution to war preparation. Orders for distraint and, in one case, imprisonment were imposed.

If pacifism has not become actually popular during 1937 or sufficiently strong to change international policy, it has nevertheless been definitely 'put on the map' of the public consciousness. (H. W. Pe.)

PADEREWSKI, IGNACE JAN, G.B.E. (1860–), Polish statesman and pianist. For a biography, *see Ency. Brit.*, vol. 17, pp. 22–23. Since 1925 he has resided at Morges, Switzerland. In the summer of 1937 his interview with General Holler and General Sikowski, ex-premier and war minister of Poland, attracted some attention in Warsaw, and gave rise to rumours about 'the Morges Front'; and in August he circulated a manifesto opposing incipient leanings towards fascism in Poland and demanding freedom for the peasants. In September he again supported the peasants in an article in a Silesian paper, circulation of which was banned in Warsaw; and a few weeks later issued an open letter to the premier, declaring that Poland needed no dictators and rallying the people to the democratic ideal. He received the G.B.E. in 1925.

PAGE, THOMAS WALKER, American economist; born at Cobham, Va., Dec. 4, 1866; died at Charlottesville, Va., Jan. 13, 1937. The University of Leipzig conferred the Ph.D. on him in 1896. From 1900 to 1906 he filled posts at the Universities of California and Texas; he was professor of economics at the University of Virginia, 1906–22; chairman of the U.S. Tariff Commission, 1920–22, and vice-chairman from 1930. In 1926 he was American expert on the League of Nations committee which planned the World Economic Conference of 1927; and in 1934 he was appointed chairman of the Inter-departmental Committee for Reciprocity Information. In hope of promoting peace, he advocated establishment of a division of the World Court to which international trade disputes might be referred.

PAINE, ALBERT BIGELOW, American author; born at New Bedford, Mass., July 10, 1861; died at New Smyrna, Fla., April 9, 1937. His most important work was a three-volume biography of Mark Twain, 1912. In addition to shorter works on Mark Twain, his other biographies included studies of Thomas Nast, George F. Baker, Lillian Gish and Joan of Arc, the French government making him a chevalier of the Legion of Honour for this last. He wrote several children's books as well as novels and travel studies.

PAINTING. In England, during 1937, perhaps more than in any other country, painters refused to participate in enterprises to save or reform the world. The British Artists' Congress endorsed the stand of the American Artists' Congress in the latter's campaign for peace and democracy; and when Germany invited British painters to exhibit in Berlin, with specific reservations as to race and political faith, the invitation was promptly rejected. Apart from these minor flurries, the course of painting was characterized by its exceptional tranquillity, and the even tenor of collective and individual aims. Collectively, painters deviated little from the methods and practices of three schools, or influences, at work in England for many years. The first and oldest school, composed of members of the Royal Academy and the Royal Institute of Oil Painters, with their innumerable disciples, contributed nothing of particular distinction. The Royal Academy exhibition was technically competent, but uninspired; the Royal Institute presented its usual array of conventionally safe and unarresting canvases; and coronation art, in oils and ceremonial accessories alike, was unfortunately entrusted to commercial producers. Academic art, however, redeemed itself, in a comprehensive showing of the works of Sir Joshua Reynolds—100 canvases representing the British master at every period of his career. The second school, founded on the open-air realism of Constable and the colour principles of Impressionism, maintained its prestige through its official organization, The New English Art Club, and delighted the public with notable exhibitions of paintings by P. Wilson Steer and the landscape art of R. O. Dunlop. The aims and methods of this school were more authoritatively exemplified in two centenary exhibitions of Constable's oils and water colours. The third school, numerically small and still in bad odour with the public, continued to battle, though somewhat perfunctorily, for non-representational art and the structural devices of Cézanne. Once regarded as sensational in the extreme, the work of such modernists as Duncan Grant, Paul and John Nash, Henry Lamb, C. R. W. Nevinson, Stanley and Gilbert Spencer, and Wyndham Lewis, seemed almost conventional in comparison with that of the surrealists, led by the Spaniard, Salvador Dali, and a handful of British devotees. The influence of French Impressionism and Post-Impressionism suffered a perceptible decline in 1937, but to the collectors and dealers the French remained the masters of modern painting. Exhibition after exhibition of Gallic painting, from Ingrés to Matisse, filled the London galleries, gaining the approbation of connoisseurs but adding the most formidable competition to the difficulties of the British painter.

The Leicester Galleries]

'FEMME À LA FOURRURE' BY HENRI MATISSE

France, the home of modern radicalism in painting and perennially the storm-centre of controversy, was content to rest on her laurels and cultivate her foreign markets. The present school of Paris which, in its formative stage, precipitated a succession of bloodless eruptions and revolts, was officially sanctioned by the State in 1937, and allotted an exhibition room in an enormous retrospective showing of French painting. Thus the most rebellious uprising in modern art was incorporated with the French tradition as an orthodox development. Picasso, the indisputable master of the school, and his confrères, Matisse, Braque, Rouault, Lurçat, Dufy, and Leger, maintained the international prominence of cubism and abstract design, not only by their official victory in Paris, but also by many exhibitions in London and New York, where their canvases continued to fetch high prices. Picasso, a Spanish expatriate, enhanced his reputation by accepting the post of non-resident director of the Prado museum, and by rallying his fellow-painters in active support of the government in Spain. This political gesture, together with a noisy demonstration of surrealism, lent colour and excitement to an otherwise uneventful year. While the modernists were industriously capitalizing their official recognition, the conservative elements of French painting were not idle. The old salons, always popular with the fashionable world, but vigorously discountenanced by the followers of Cézanne, appeared again with something of their former splendour, exhibiting figure studies as correct as those of Bouguereau, and portraits in the style of Manet and Courbet. A new school of romanticists was consolidated, a group of younger artists who, in their repudiation of non-representational art, returned to the invigorating subject pictures of Delacroix and painted dramatic conceptions for the glory of France. A third element, a decorous offshoot of modernism, refining the styles of Cézanne, Van Gogh, and Gauguin into decorations acceptable to academic juries, produced charming garniture for drawing-rooms. But the activities and disagreements of the various schools were reduced to temporary unimportance by the historical loan-exhibition of French painting from the sixteenth century to the present time, a magnificent presentation made possible by the courtesy of European and American collectors. In this great survey, the continuity of the French tradition was convincingly revealed : the passion for order and precision, the tendency towards the formalization of nature, and finally, in contemporary examples, the triumph of pattern over content or subject-matter.

In Germany, the trend of painting, by official decree, was reactionary and opposed to modernism in all its ramifications. So strong was government sentiment against contemporary French art and the various experimental schools, that many German painters of modernist affiliations, unable to work in a hostile atmosphere and denied exhibitions, emigrated to France and America. The art approved and stipulated by the State was a safe and sound art, romantic in conception, laboriously detailed, and scrupulously exact in draughtsmanship. Imbued with romantic ideas, young German enthusiasts returned to the grandiose imaginings of Caspar David Friedrich and the men of the early nineteenth century. When working for the State, artists were regimented like soldiers, but no definite propaganda was required of them save an allegiance to the general policy of a strictly Germanic ideology. Modernist exhibitions were permitted only for educational purposes, that is to say, as examples of forbidden art, but such exhibitions seldom failed to attract large and sympathetic audiences.

The Leicester Galleries]

'IL CANAREGGIO' BY RICHARD SICKERT

In Italy, there was no intervention on the part of the State, so long as artists signified their loyalty, and no official preferences for one school above another. The conservative painters, numerically preponderant, remained aloof from politics, but the more radical groups like the futurists converted their symbolical apparatus into a flamboyant glorification of Fascism. Russia, after holding art for years in the most rigorous service of Soviet economics, relaxed her authoritarian principles and allowed the creative impulse more freedom. The result was a quiet growth of more spontaneous painting, some of it idyllic and reminiscent of folk art. In Spain, current production was virtually non-existent, painters of all denominations either fighting on the battlefield or fighting to save the art treasures of Spain from the depredations of war.

In external manifestations, America was extraordinarily active in the year 1937. Art, for once, enjoyed a general awakening and contributed in no small measure to the excited spirit of nationalism. The major impetus in this direction, so far as commissions are concerned, came from the Federal government which, having erected an elaborate machinery of administration, appropriated vast sums of money not only for the material assistance of needy artists, but also for mural decorations in all parts of the country. The granting of Federal subsidies was not entirely beneficial: amateurs, in wholesale lots, were suddenly promoted to the ranks of the professionals ; political influence often played a part in the awarding of important commissions, and many artists were disposed to leave their destiny to the whims or dictates of the State. But no artists of proved ability were ignored ; and the bureaucrats at Washington, by co-operating with regional boards of control, rendered great service to the causes of American art.

More significant than Federal participation was the rise to national prominence of a school of native painters united in the determination to promote independence of thought and action by portraying the actualities of American life. The leaders of the school, Thomas Hart Benton, John Steuart Curry, Grant Wood, Charles Burchfield, and Reginald Marsh, succeeded in removing art from the jurisdiction of specialists and fanatics, and bringing it close to the life of the common man. Aroused to action by a wealth of material hitherto proscribed on the grounds of vulgarity, they painted mural decorations of the transition of a pioneer civilization to industrialism, and easel studies of the picturesque difficulties of cotton planters, the dramatic aspects of plains and mountains, the migrations from the soil to the cities—the rapidity, turmoil, and colour of a restless nation. These men and their followers founded a popular movement in art which, on the basis of accomplished work, marks the end of American subservience to European cultural fashions. (T. Cr.)

PAINTS AND VARNISHES. Expansion during 1937 was due in some measure to the international armaments programme requiring finishes for ship building, aircraft construction, and the like, and to continued building. Manufacturers are now realizing that while some paint mills are suitable for making certain paints, other formulations require different types of mill. There was a marked increase in the use of the pressure bar single roll mill ; for reasons of economical operation and where quantities of thinners are involved, ball and pebble mills found more extensive use.

Synthetic Resin Media.—Marked progress in finished paints was made by the use of media prepared from synthetic resins; alkyd resins were to the fore in this respect. A comprehensive system of house paint classification has been perfected.

Pigments.—Developments in pigments centred in particle size and shape and conversion of pigment/water to pigment/oil dispersions. Progress in white pigments includes the discovery of an organic pigment prepared by reaction between polyhalogenated aralkyl halides and alkali metal salts of halogenated phenols. Heat and hydrolysis resistance and high refractive index were claimed. Graphite was suggested as an anticorrosive pigment; outstanding properties were claimed.

Driers.—The trend in driers is towards materials causing film drying without further oxidation effect; production on a commercial scale of monoglycerides of drying oils produced new possibilities. Work continues on this problem.

Production.—While paint manufacture is carried on in most countries, the largest output may be credited to the United States of America, Great Britain, and Germany. Latest available statistics for Britain, published in 1937, are the 1935 census of production figures. Gross output for 1935 was £21,737,000 compared with £19,747,000 in 1934. The number of persons employed was 24,668 and 23,289 respectively.

Available data for the United States of America gave the gross value of products as $289,441,956.00 (£57,888,391) for 1933, with 22,880 employees engaged, and 1936 Dominion Bureau of Statistics returns for the Canadian industry gave gross value of products as $22,651,225.00 (£4,530,245) with 3,124 persons employed.

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PALAEONTOLOGY. Palaeontology, like its fellow science of zoology, has reached a stage in which few startling developments are to be expected. The past year has proved no exception to this, but has produced a considerable number of excellent and well-illustrated descriptive papers which are of interest to the specialist alone. Though no group is outstanding in this respect, mention may perhaps be made of the many admirable studies of fossil fish.

The economic application of palaeontology is well marked in comparison with other branches of geology, but it is regarded in this case only as a means to an end, that is, as a key to historical geology. Detailed stratigraphical knowledge is necessary, in particular, to the oil geologist, who is so greatly in demand at the present time, and this knowledge must be based largely on an intimate acquaintance with the fauna of the formations in question. Thus the various oil companies have done much to foster the training of students in the study of those groups which they are most likely to meet in oil-fields. As a result of this, the Ostracods and Foraminifera have come in for a great deal of attention, especially in American universities. There is the danger, however, that in a period of economic expansion, such as is now being experienced, the purely practical side of the science may be over-stressed at the expense of the more fundamental evolutionary side, which does, indeed, sometimes tend to modify or even disprove the working rules by which the stratigrapher is guided.

Much good work has been accomplished recently in the coal-fields of Great Britain and America, where a detailed examination of both fauna and flora has not only contributed to the science, but has developed new methods of zoning which are of very definite practical value.

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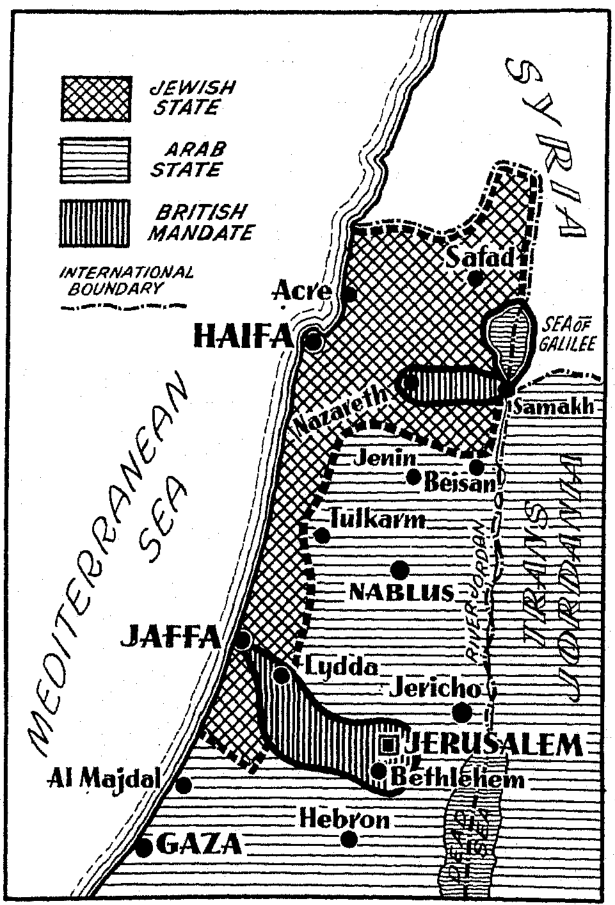
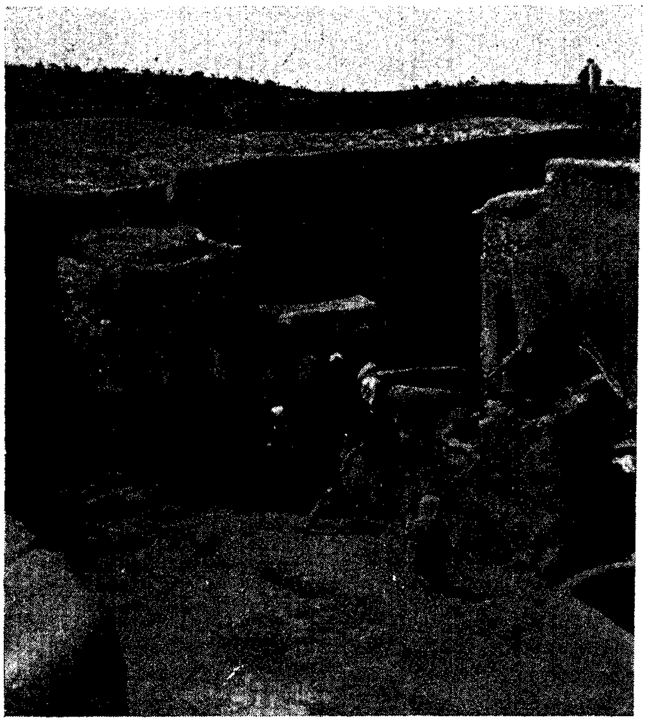
PALESTINE. Palestine lies on the western edge of Asia, being bounded on the west by the Mediterranean, on the south-west by Egypt, on the south by the gulf of Aqaba, on the east by Transjordan, on the north-east by Syria, and on the north by the Lebanon. It is administered by Great Britain under a mandate from the League of Nations. The powers of the mandatory are exercised by a high commissioner resident in Jerusalem. General Sir Arthur Grenfell Wauchope, G.C.M.G., K.C.B., C.I.E., D.S.O., high commissioner since 1931, retired at the end of Feb. 1938, Sir Harold Alfred MacMichael, K.C.M.G., D.S.O., having been appointed to succeed him.

Area, Population, and Cities.—Palestine is a little larger than Wales, having an area of about 10,100sq.m. No census has been taken since 1931, but the population is now estimated to be approximately 1,400,000, consisting roughly of one million Arabs and 400,000 Jews. Of the former, one in nine is a Christian, the rest are Moslems. The population has grown rapidly under the mandatory régime, owing to a falling death-rate among the Arabs and a large immigration of Jews from eastern and central Europe. Jewish immigration, which totalled 290,000 between 1919



Daily Herald]

SKETCH MAP SHOWING THE PARTITION OF PALESTINE AS PROPOSED BY THE ROYAL COMMISSION



School Films]

PALESTINE. A HILLSIDE VILLAGE, INHABITED BY THE SETTLED FELLAHIN WHO CULTIVATE THE COMMUNAL LAND AROUND THEM

and 1936, reached a climax in 1935 with a figure of 61,854, but has since diminished :

Jewish immigrants in first seven months of 1935 : 35,637.
,, ,, in first seven months of 1936 : 18,610.
,, ,, in first seven months of 1937 : 6,760.

Until 1937, there was no limit to the entry of persons having a capital of at least £P.1,000 ; the remainder, apart from dependents, entered under the labour schedules drawn up every six months in accordance with the government's estimate of the country's economic absorptive capacity. In July, however, the mandatory Power announced the restriction of Jewish immigration in all categories, between Aug. 1937 and March 1938, to a total of 8,000. This was an interim measure, designed to relieve tension while a scheme of partition (*see* below) was being worked out.

English, Arabic, and Hebrew are all recognized as official languages. There are, apart from a number of private schools, two entirely distinct educational systems, the one administered directly by the Department of Education and giving instruction in Arabic, the other controlled by the Va'ad Leumi (Jewish General Council) and using the Hebrew language. The government's expenditure on education is divided between the two systems in proportions determined by the ratio between the numbers of Arab and Jewish children of school age. These grants are inadequate to provide universal elementary education, but this is ensured, on the Jewish side, by voluntary effort.

The largest town in Palestine is Tel Aviv, with an exclusively Jewish population of 150,000. There follow Jerusalem, with 120,000, of whom 60 per cent. are Jews, and Haifa, with 100,000 and a slight Jewish majority. The only other town of considerable size is the predominantly Arab port of Jaffa, with 70,000 inhabitants.

History.—The resentment of the Arabs against the establishment, under the terms of the mandate, of a Jewish National Home in Palestine came to a head in 1936. A general strike began in April and continued into October. During the whole of that period there were attacks by armed Arabs on Jewish settlements, British troops, and the local police, accompanied by the destruction of Jewish crops and the sabotage of communications, and developing finally into guerilla warfare. Thirty-seven members of the defence forces and 82 Jews were killed, while not less than 1,000 Arabs lost their lives. His Majesty's government appointed a Royal Commission, under the chairmanship of the late Earl Peel, to investigate the underlying causes of these disturbances and to make recommendations for the prevention of their recurrence. The commissioners were in Palestine from Nov. 1936 to Jan. 1937, and their report was published on July 7, 1937. They found that the underlying causes of the outbreak were the desire of the Arabs for national independence and their fear of political domination by the Jews. Of the other Arab countries placed under 'A' Mandates by the peace treaties, Iraq is already a sovereign State, Syria and the Lebanon have secured a treaty which ensures their emancipation within two years, and even backward Transjordan has been recognized as an 'independent government'. In Palestine alone no important step has yet been taken towards self-government, because any power conceded to the Arab majority would have been used to hinder the development of the Jewish National Home. Thus the clauses of the mandate which are vital to the Jews have frustrated what the Arabs regard as its essential purpose, the fostering of self-governing institutions. They feared, furthermore, that the independence which was being withheld while they were in a majority would be granted as soon as the Jews outnumbered them. They therefore demanded the cessation of Jewish immigration and the establishment of representative government. These demands could not be granted without a violation of the pledges given by Great Britain to the Jews ; their refusal, on the other hand, would involve subjecting the Arabs to 'a sort of creeping conquest'. Having stated this dilemma, the commissioners proposed as an escape from it the partition of Palestine into two independent States. As an indication of how this might be done, but without committing themselves to its detail, they submitted the following plan (*see* map) : (1) a Jewish State consisting of Galilee, the plain of Esdraelon, and the maritime plain as far as a point about 10 miles south of Rehovot ; this would include most of the areas in which there has been a large Jewish settlement ; (2) an Arab State consisting of the greater part of Palestine to the south and east of the Jewish frontier, together with Transjordan ; (3) a permanent British mandate over the Holy Places of Jerusalem, Bethlehem, and Nazareth, with a corridor connecting the first two with the sea. The port of Jaffa, however, was to belong to the Arab State. Treaties in accordance with the precedents of Iraq and Syria would be concluded between Great Britain on the one hand and the Jewish and Arab governments on the other. They should contain guarantees for the protection of minorities, and for transit facilities for Arab trade through Haifa and Jewish trade with Egypt. The mandatory Power would retain an enclave on the Gulf of Aqaba, and temporary control of the mixed towns of Haifa, Acre, Safad, and Tiberias.

The British government announced, simultaneously with the publication of the report, its endorsement of the principle of partition. On July 21, the House of Commons, without committing itself to that policy, authorized its submission to the League of Nations. The Peel Report was then examined at an extraordinary session of the Permanent Mandates Commission, from July 30 to Aug. 18.

Reporting to the Council of the League, this body declared itself favourable to the preparation, by the mandatory Power, of a definite plan involving partition, but opposed to the immediate concession of independence to the two States which would thus be created. There should be a period either of provincial autonomy under a central authority presided over by the mandatory, or two new mandates. In September the Council of the League authorized the British government to work out the details of a scheme for submission to a future meeting of the Council. Speaking in the House of Commons on Oct. 21, the Colonial Secretary announced that a special committee was to be appointed for this purpose ; it would not, however, begin its work until order had been fully established in Palestine.

There had been a renewal of terrorist activity in February, March, and April, and after a lull in the early summer, it began again in August. On Sept. 26, Mr. L. Y. Andrews, acting district commissioner of Galilee, was shot dead outside the Anglican church at Nazareth. The government thereupon decided on stronger measures than had hitherto been taken. The Higher Arab Committee, the unofficial body which had assumed direction of the strike in 1936, was declared an unlawful association, and four of its members were deported to the Seychelles. Its leader, Haj Amin Effendi Al Husseini, the Mufti (*q.v.*) of Jerusalem, was deprived of his offices as president of the Moslem Supreme Council and chairman of the General Wafd Committee, the body controlling the disposition of religious funds. A fortnight later he fled from Palestine and went to Beirut. Meanwhile, an order was published authorizing condemnation for murder on the uncorroborated evidence of a single witness. Sir Charles Tegart, formerly of the Indian Police, was appointed to advise the government on methods of dealing with terrorism. And on Nov. 18 military courts were established throughout Palestine, with power to try persons accused of carrying or discharging firearms—either of these offences was to be punishable by death—or of causing sabotage and intimidation. The sentences of these courts are subject to confirmation by the General Officer Commanding the British troops in Palestine, and from his decision there is no appeal. Despite the dispersal of the Arab leaders and the speedy infliction of the first death sentence, however, acts of terrorism remained as numerous as before.

Arab opposition to the idea of partition was uncompromising and unanimous. It was reiterated, after the flight of the Mufti, by Ragheb Bey Nashashibi, leader of the National Defence Party, which is generally regarded as the moderate wing of the Arab movement. Nor was this feeling confined to Palestine. The publication of the report drew immediate protests from the prime minister of Iraq and the president of the All-India Moslem League ; it was the subject of official representations by the Iraqi government at Geneva, and was condemned by the Egyptian delegate to the Assembly of the League. On Sept. 8 a pan-Arab Congress opened at Bloudan, in Syria, with delegates from all the Arab countries except the Yemen. Speeches were made warning Great Britain that if she continued to support Zionism, she would no longer be able to count on the friendship of the Arab peoples.

On the Jewish side opinion was less definite. All sections were opposed to the scheme suggested by the Peel Commission, but to many the principle of partition was acceptable, because immigration into a Jewish State would, for a period at least, be on a more generous scale than under the mandate. At the 20th Zionist Congress, held at Zürich in August, the majority of the General Zionists and the Labour Party followed Dr. Weizmann's lead, and carried resolutions empowering the executive to ascertain the precise intentions of the British government and lay them before a newly elected Congress.

Fox Photos]

PALESTINE. A VIEW OF THE ROAD NEAR JORDAN

The year closed, therefore, in an atmosphere of uncertainty, and the persistence of disorder in Palestine still prevented the mandatory Power from appointing the committee whose work will enable it to define its intentions more clearly.

Trade and Communications.—Since the Balfour Declaration, the Jewish people have sunk some £P.80 millions of capital in Palestine, and this money, harnessed to the energy of the Jewish settlers, has transformed the country from a backward community of subsistence farmers into a versatile and prosperous economic organism.

Exports from Palestine are dominated by citrus fruits, which have accounted in recent years for over 80 per cent. of the total value. Of these the bulk are oranges, though there is an increasing production of grapefruit. The export of these crops, which is carried on from November to April, rose steadily to 7,331,000 cases in 1934–35, fell to 5,897,000 in 1935–36, and reached 10,779,000 in 1936–37. Although prices were low owing to the dumping of Spanish oranges, this record output enabled Palestine to show a substantial increase in the value of her export trade during the first eight months of 1937 :

	Exports	Imports
First 8 months of 1935	£P.3,358,000	£P.11,597,000
First 8 months of 1936	£P.2,393,000	£P. 8,597,000
First 8 months of 1937	£P.4,063,000	£P.10,622,000

As well over half the exports fall in the first quarter of the year, this table does not give an adequate impression of the adverse balance of visible trade; in 1935 it reached £P.13,638,000 on a total foreign trade of just over £P.22 millions. The gap between exports and imports is only partially closed by the receipts of tourist traffic, the proceeds of Zionist funds, and the import of capital by immigrants. The Peel Commission recommended the opening of negotiations for the revision of Article 18 of the mandate, which precludes Palestine from taking any fiscal measures which would result in discrimination against States-members of the League of Nations.

There have been important developments in communications during 1937. The government has constructed a through road from Tel Aviv to Haifa, thus linking the two major industrial centres; and the port of Tel Aviv, established as a temporary inlet for certain classes of goods while Jaffa was incapacitated by the strike in 1936, has been granted the right to handle all classes of merchandise. Palestine is increasingly important as a centre of civil aviation. Gaza and Lydda are stopping-places respectively for Imperial Airways Ltd. between England and Australia, and for the Royal Dutch Air Line between Holland and the East Indies. An Egyptian line uses the airport at Haifa and continues to Baghdad.

Finance and Banking.—The unit of currency is the Palestinian pound, at parity with sterling; it is divided into 1,000 mils. In March 1936, following a series of prosperous years, the Treasury had an accumulated surplus of £P.6,268,000. The disturbances of April–October, however, resulted in a deficit of £P.1,396,000 on the year ending March 31, 1937. The revenue returns for April–July 1937 showed an increase of 17 per cent. on the corresponding period of the previous year.

Defence Forces.—The British forces normally stationed in Palestine before the outbreak of 1936 consisted of two infantry battalions, one Royal Air Force flight, and three sections of an armoured car company. Early in 1937 there were, in addition to this garrison, six more infantry battalions and a field company of the Royal Engineers. The War Office announced at the end of July that Major-General A. P. Wavell had been appointed General Officer Commanding the British forces in Palestine and Transjordan, in succession to Lieut.-General J. C. Dill.

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PANAMÁ, a republic at the juncture of Central and South America; language, Spanish; capital, Panamá; president, Dr. Juan D. Arosemena. The area is 34,169sq.m., including the Canal Zone. The population by the 1930 census was 467,459, and was officially estimated as 534,631 in 1936. The chief cities (with 1930 populations) are Panamá, 82,827, and Colon, 33,460. Some popular dissatisfaction was manifested in 1937, but President Arosemena's firm stand against anti-government agitation prevented any serious disturbance. On Dec. 6, the government announced the final adjustment of boundary issues with Colombia, left unsettled since 1922. Panamá has 257m. of railways and 495m. of roads, with 96m. under construction in 1937. Her strategic position in relation to all parts of the hemisphere makes her the hub of inter-American aviation. Imports, principally foodstuffs and manufactured articles, totalled 18,989,846 balboas in 1936, with the United States supplying 51·5 per cent. and Japan 15·7 per cent. Exports were 7,559,179 balboas, with bananas aggregating a third of the total. Demands of the Canal tourist and other traffic tend to balance exports and imports. Gold-mining is increasing in importance, with an output of 400,000 balboas in 1936. The monetary unit is the balboa (value: approx. two shillings). The 1937–38 budget calls for 18,813,700 balboas, of which 3,417,351 balboas is for payment on the public debt. Public debt totalled 18,890,758 balboas in 1936. In 1937, there were 581 primary schools (including 509 rural), with an enrolment of 58,231, 4 secondary schools (enrolment 2,537), and a national university. Panamá has no army, but maintains a national police force of approximately 1,000. (L. W. BE.)

PANAMA CANAL AND CANAL ZONE. Area, 553·8sq.m., of which 170·2 are water; population, June 1937, exclusive of Army and Navy personnel, 28,707, of whom 8,685 were from the United States. The length of the canal from shore line to shore line is 40·27m. Both canal and zone belong to the United States.

The Panama Canal connects the Atlantic and Pacific Oceans through the narrow isthmus of Panama, at approximately 9° N. lat. and 79° W. long. It was opened to traffic on Aug. 15, 1914. The gross capital investment adjusted as on July 1, 1937, was $538,160,473. Particulars of the traffic through the canal for the last 10 fiscal years are as follows:

Fiscal year ending June 30	Vessels *	Cargo Tons	Tolls levied Dollars
1928	6,253	29,615,651	26,922,201
1929	6,289	30,647,768	27,111,125
1930	6,027	30,018,429	27,059,999
1931	5,370	25,065,283	24,624,600
1932	4,362	19,798,986	20,694,705
1933	4,162	18,161,165	19,601,077
1934	5,234	24,704,009	24,047,183
1935	5,180	25,309,527	23,307,063
1936	5,382	26,505,943	23,479,114
1937	5,387	28,108,375	23,102,137

* Ocean-going commercial vessels, over 300 net tons Panama Canal measurement, excluding canal vessels, army and navy, Panamanian government, Colombian army and navy vessels.

Of the total number of commercial transits during the fiscal year ended June 30, 1937, 1,670 were of United States registry, 1,385 British, 674 Norwegian, 332 German, 282 Japanese, 221 Netherlands, 189 Danish, 184 Panamanian, 108 Swedish, 100 French, and the remaining 242 of 21 other nationalities.

United States traffic was seriously affected from the first week of Nov. 1936 until the middle of Feb. 1937, by the maritime strike in the United States, and is not therefore representative of a normal year.

During the fiscal year ended June 30, 1937, tolls collections averaged $4,288 per vessel of over 300 net tons Panama Canal measurement. From the opening of the canal to the end of June 1937, there have been 92,990 transits of such vessels. Tolls collections thereon amounted to $406,215,948. Legislation passed by the U.S. Congress in 1937 and effective March 1, 1938, makes the Panama Canal rules for measuring now the sole basis for levying tolls.

A concrete dam across the Chagres river at Alhajuela was completed in 1935, creating Madden lake, which provides a reserve storage of 22 billion cubic feet of water for use in maintaining the level of Gatun lake during dry seasons. A hydro-electric plant of 20,000KVA capacity is situated beside the spillway.

In accordance with a joint resolution of Congress, which was approved May 1, 1936, studies are being made of the possibilities of increasing the capacity of the canal for the future needs of inter-oceanic shipping. It is not expected that the increased capacity will be needed in the near future, and the studies will probably extend over several years.

PAN-AMERICAN UNION, an international body created by the 21 American republics for the fostering of mutual understanding and co-operation, with the essential duty of making effective the resolutions adopted by the successive Pan-American Conferences ; headquarters, Washington ; director, Dr. Leo S. Rowe. A governing board arranges inter-American gatherings for the purpose of conferring on problems of interest. The Union is financed by contributions from the 21 members on the basis of population. It collects and publishes cultural, statistical, and other information of Pan-American interest.

In 1937, the Union was active in giving effect to the recommendations of the Buenos Aires Conference of 1936 in the field of economic co-operation and promotion of closer intellectual co-operation and in extending its good offices and facilities to various conferences. It sponsored a series of cultural radio programmes, gave aid to a number of special conferences, including the Pan-American Educational Conference (Mexico City), the Inter-American Aviation Conference (Lima), and the Inter-American Radio Conference (Havana), and began preparations for the Eighth International Conference of American States, to be held at Lima in Dec. 1938. (L. W. Be.)

PAPER AND PULP INDUSTRY. The paper business in Great Britain was excellent in 1936 and 1937. Statistics for production in 1936 (in long tons) based on raw materials used were as follows :

	Paper	Board
Bleached sulphite . .	117,000	18,000
Unbleached sulphite . .	555,000	25,000
Sulphate	212,000	38,000
Mechanical . . .	703,000	47,000
Knotter	3,000	17,000
Esparto	130,000	—
Rags, etc. . . .	50,000	—
Waste paper . . .	10,000	290,000
Loading, etc. . . .	220,000	15,000
	2,000,000	450,000

The estimate for 1937 gives the same, or slightly higher, figures.

Expansion of new mills through the addition of new machines was an outstanding feature of the development of the paper industry in Great Britain. From 1935 to 1937 inclusive, five companies added one or more large machines. Kraft paper production has nearly doubled in the last few years, although much of it was made on machines formerly used for other grades.

In the United States the first eight months of 1937 were notable because of the boom conditions that existed. Recession followed, due to fear and decreased demand ; before this, demand far outran supply and was an important contributing factor towards the rapid expansion in production that was made. By far the great part of this expansion took place in the Southern States, where about 20 new mills were started, which when completed in 1937 and 1938 will represent a total cost of more than $75 millions. These mills are almost entirely designed for the manufacture of sulphate pulp, kraft wrapping paper, bags, and kraft liner board. A feature of this development was the number of new mills for the production of bleached sulphate for use in the preparation of white papers such as tissue, book, and specialities. Construction on one mill at Fernandina, Fla., has been started to make sulphite pulp for rayon manufacture. Outside of the South there have been but few new mills built, but the expansion in existing mills has been very great.

Canadian Official News Bureau]

THREE RIVER, QUEBEC, SHOWING PAPER AND PULP MILLS WITH A CAPACITY OF 700 TONS OF NEWSPRINT PER DAY

ESTIMATED UNITED STATES PAPER PRODUCTION FOR 1937
(In Tons)

	Census 1936	Estimate 1937
Newsprint . . .	938,287	966,436
Printing Papers . .	1,636,837	1,781,700
Cover and Writing . .	627,853	646,051
Wrapping Papers . .	1,879,323	2,067,255
Paperboards . . .	5,454,637	5,727,369
Tissue and other . .	1,438,615	1,582,477
Total . . .	11,975,552	12,771,288

In Canada the outstanding new mill is the newsprint plant of the Ontario Paper Company at Baie Comeau, Quebec. The expenditure for pulp and paper mill, hydro-electric plant and town-site for 5,000 inhabitants will probably exceed $30 millions. In general, business in Canada during 1937 was unusually good. In 1937 there were about 3,646,942 tons of newsprint produced. This is the major paper production of Canada.

There have been no outstanding technical developments in the paper industry during the past two years, although nearly all of the processes and equipment have been improved in detail. In wood pulp production it is noteworthy that pulp for rayon and chemical uses has greatly increased. In the sulphite pulp industry there has been a marked trend towards the use of forced circulation systems and special alloys for pipes and valves. In paper making, an increased use of fillers to obtain greater opacity of printing papers is observed. In the sulphate pulp industry more attention is being paid to the development of new by-products.

Because of the importance of newsprint as a measure of the world's cultural development, it is of interest to note the annual pounds *per capita* consumption in several countries :

United States, 57; Great Britain, 55; New Zealand, 55; Australia, 53; Canada, 33; Denmark, 30; Sweden, 27; Argentina, 26; Netherlands, 23; Belgium, 21; Switzerland, 21; Norway, 20; France, 18; Japan, 13; Finland, 13; Germany, 11; Austria, 9; Czechoslovakia, 5; Greece, 4; Italy, 3; Mexico, 3; Poland, 2; Russia, 2; Yugoslavia, 1.

PAPUA: *see* NEW GUINEA.

PARAGUAY, an inland republic in southern South America; language, Spanish; capital, Asunción; provisional president, Felix Paiva. The area, including the Chaco region (approx. 100,000sq.m.), disputed with Bolivia, is 173,700sq.m. Population (est. 1935) 913,000. The chief cities are: Asunción (90,000), Villa Rica (30,000), Villa Concepcion (25,000).

History.—Paraguay is nominally governed by a president and congress under the constitution of 1870, but the constitution has been suspended, except at brief intervals, for several years. Internal developments in 1937 were essentially the outgrowth of the economic and social conditions resulting from the termination of the Chaco War with Bolivia, and were featured by political instability and revolutionary activity. On March 11, in furtherance of his totalitarian programme, Colonel Rafael Franco, provisional president since 1935, placed all industries under government control, a move bitterly opposed by foreign, especially Argentine, interests in the country. In August, when, in accord with the Chaco peace protocol, Franco ordered the withdrawal of troops from the Chaco, the army refused. On Aug. 13, the cabinet was forced to resign, and, on Aug. 15, President Franco was forced out of office and exiled by a junta which named as provisional president, Dr. Felix Paiva, dean of the faculty of law at the national university and former vice-president. President Paiva restored the constitution and promised early elections, but on Sept. 7 his regime was threatened by an abortive revolt whose objective was the restoration of Franco. After several days of uncertainty the revolt was quelled, and President Paiva assumed dictatorial powers, suspended the constitution, and proclaimed martial law. On Nov. 8, martial law was lifted, after the suppression of a new Franco revolt. For the most part, Paraguayan foreign relations in 1937 were in connexion with the negotiations for a definite settlement of the Chaco dispute with Bolivia (*see* CHACO); but with political instability in both countries, little positive achievement was registered. In February Paraguay completed her formal withdrawal from the League of Nations. A tripartite trade agreement was made with Argentina and Bolivia in the same month.

Trade and Communications.—External communication is primarily by way of the Parana river, where regular steamship service is maintained, and by railway and regular air service to Argentina. Paraguay has 264m. of railroads. Imports (chiefly foodstuffs, textiles and machinery) in 1935 totalled 11,630,390 gold pesos, with Argentina supplying 50·5 per cent. and Japan 14·5 per cent. Exports were valued at 11,396,050 gold pesos, with 31 per cent. destined for Argentina, and 55 per cent. additional for reshipment from Argentina. Principal export commodities are cotton, quebracho extract, lumber, and hides. Cotton, maté (Paraguay tea), quebracho, lumbering, and cattle are the principal industries. The monetary units are the paper peso and gold peso, both based on Argentine currency. (Value; approx. 4*s.*, and 2*s.* 7*d.*) The national budget for 1937 was £446,588. Paraguay has approximately 740 elementary and secondary schools (enrolment about 100,000) and one university. Military service is obligatory. The peace-time army comprises 5,250. (L. W. BE.)

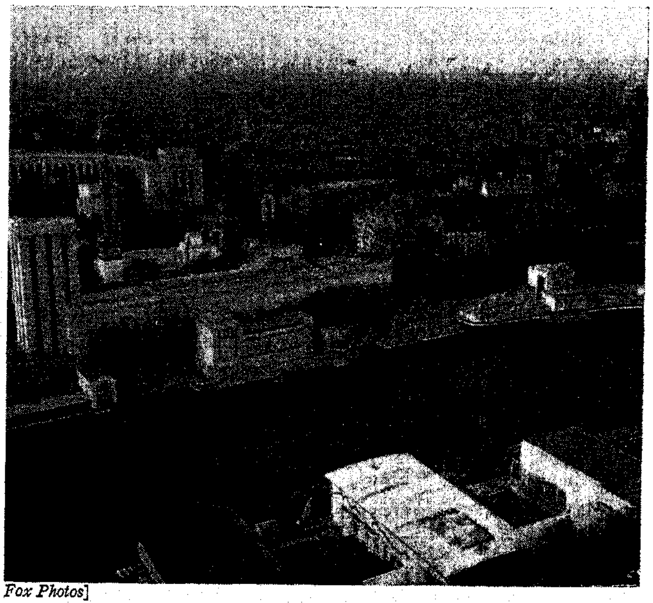
PARENTS' ASSOCIATIONS: *see* EDUCATIONAL ASSOCIATIONS: *Parents.*

PARIS. The life and outward aspect of Paris in 1937 was dominated by preparation for the International Exhibition, and, from the end of May, by the exhibition itself. Nevertheless, the opening of the exhibition, which was to have taken place at the beginning of May, was delayed as a result of the application of social legislation, and thus the number of visitors was fewer than had been hoped—over 31 million, as against over 35 million for the Colonial Exhibition. General unrest and monetary difficulties also deterred many foreigners. Still, throughout the summer the influx of visitors restored to Paris its former gaiety and animation. The fairy-like illuminations of the exhibition and the various displays organized by the Comité des Fêtes all had a great success.

The exhibition pavilions lined the two banks of the Seine below the Pont Alexandre III. Although the exhibition is not to be continued in 1938, the architectural patrimony of Paris will be enriched by the new Palais de Chaillot (formerly the Trocadero) and by the two magnificent palaces on the Quai de Tokio, the one national, the other municipal, destined for exhibitions of contemporary art. Further, the Pont d'Iéna has been widened, and the old national warehouses on the Quai d'Orsay demolished.

Considerable works of town improvement have been undertaken both in the city and in the suburbs. The population of Paris in the last census was, in round numbers, 2,871,000, and that of the suburbs 2,042,000, or nearly 5 millions for the 118,600ac. of the Seine department. To this should be added parts of the departments of Seine-et-Oise, Seine-et-Marne, and Oise. The population has spread into the suburbs in recent years, but the increased cost of transport tends to bring people back into the city.

The laying-out of the site of the old fortifications has been accomplished, and the front is now a vast circle of gardens, sports grounds, and open spaces. The demolition of 17 blocks of insanitary houses is being undertaken; this will mean the destruction of 4,000 dwellings and the transfer of 200,000 persons. On the site of the first block, huge



Fox Photos]

PANORAMIC VIEW OF THE PARIS EXHIBITION, 1937 market-halls are being constructed to enlarge the Halles Centrales.

Apart from these large and exacting projects, the principal works effected in 1937 included a continuation of the great circular road planned to include the old military boulevards, which is becoming a much-used channel of communication. Wide underground passages are being constructed under this road at the busiest crossings: at the Portes de Champerret, de Clichy, d'Italie, de la Villette, Maillot, and Dauphine. The Pont National and the Pont d'Auteuil have been widened. This big circular road should relieve congestion in the heart of Paris. Three new metro lines have been opened, and others prolonged into the suburbs (Neuilly, Montreuil, Sèvres, Levallois, Issey). The Sceaux–Massy–Palaiseau railway has been taken over by the Metropolitan Company. In 1937, the first stage was realized in a big scheme for regulating the lines leaving the centre of Paris and radiating out towards the outskirts; the scheme should see completion in three years.

These results are the more remarkable, but also the more costly, in that Paris has had to bear heavy charges in the application of new social legislation; the effect of monetary devaluation must also be remembered. If the total budget figure for 1937 surpassed that of 1936 by 167 millions, that of 1938 will increase it by 614 millions. The proportions of the main items of expenditure remain much the same: personnel 40 per cent., debts 25 per cent., police and service, 23 per cent., upkeep 12 per cent. The heavy charge for unemployment is covered by the issue of short-term bonds which, from time to time, are consolidated by a long-term loan, of which the Budget only needs to carry the annual payments. But the debt already amounts to more than 17 milliards. (R. Pin.)

PARLIAMENT, HOUSES OF. The British Houses of Parliament are composed as follows:

House of Commons.—

(*C.* = Conservative; *Com.* = Communist; *I.L.P.* = Independent Labour Party; *Ind.* = Independent; *L.* = Liberal; *L. Nat.* = Liberal Nationalist; *Lab.* = Labour; *N. Lab.* = National Labour; *Nat.* = Nationalist; *N. Abst.* = National Abstentionist.)

Constituency	Member	Majority
Aberdeen, *North*	G. M. Garro-Jones	*Lab.* 2,962
,, *South*	Sir J. D. W. Thomson, Bt.	*C.* 13,453
Aberdeen & Kincardine		
Central	Sir R. W. Smith	*C.* 8,569
Eastern	R. J. G. Boothby	*C.* 3,121
Kincardine & Western	Sir C. M. Barclay-Harvey	*C.* 2,636
Accrington	Maj. H. A. Procter	*C.* 4,070
Anglesey	Megan Lloyd George	*Ind. L.* 4,128
Angus	Capt. W. T. Shaw	*C.* 4,583
Antrim (2)	Maj. Rt. Hon. Sir Hugh O'Neill, Bt.	*C.* unopp.
	Sir Joseph M'Connell, Bt.	*C.* unopp.
Argyll	F. A. Macquisten, K.C.	*C.* 1,774
Armagh	Lt.-Col. Sir W. J. Allen	*C.* unopp.
Ashton-under-Lyne	F. B. Simpson	*Lab.* 14
Ayr and Bute		
Bute and Northern	Lt.-Col. Sir C. G. MacAndrew	*C.* 9,033
Kilmarnock	Kenneth Lindsay	*N. Lab.* 6,557
South Ayrshire	Rt. Hon. James Brown	*Lab.* 4,804
Ayr District	Lt.-Col. Sir T. C. Russell Moore	*C.* 12,619
Banff	Sir J. E. Findlay, Bt.	*C.* 603
Barnsley	J. Potts	*Lab.* 7,635
Barrow-in-Furness	Sir J. Walker-Smith	*C.* 217
Bath	T. L. E. B. Guinness	*C.* 12,020
Batley and Morley	W. Brooke	*Lab.* 2,828
Battersea, *North*	W. S. Sanders	*Lab.* 5,203
,, *South*	H. R. Selley	*C.* 5,447
Bedfordshire, *Bedford*	S. R. Wells	*C.* 8,872
,, *Luton*	Rt. Hon. E. Leslie Burgin	*L. Nat.* 13,628
,, *Mid-*	A. T. Lennox-Boyd	*C.* 4,431
Belfast, *East*	Capt. Rt. Hon. H. Dixon	*C.* unopp.
,, *North*	Thomas Somerset	*C.* unopp.
,, *South*	W. J. Stewart	*C.* unopp.
,, *West*	A. C. Browne	*C.* 13,747
Berkshire, *Abingdon*	Maj. Sir R. G. C. Glyn, Bt.	*C.* unopp.
,, *Newbury*	Brig.-Gen. H. Clifton Brown	*C.* 15,517
,, *Windsor*	A. A. Somerville	*C.* unopp.
Bermondsey		
Rotherhithe	Ben Smith	*Lab.* 4,665
West	Dr. A. Salter	*Lab.* 4,929
Berwick & Haddington	J. H. F. McEwen	*C.* 5,540
Bethnal Green		
North-east	D. Chater	*Lab.* 4,937
South-west	Sir P. A. Harris, Bt.	*L.* 1,066
Birkenhead, *East*	H. Graham White	*L.* 6,694
,, *West*	Lt.-Col. J. S. Allen	*C.* 3,753
Birmingham		
Aston	Capt. Hon. A. O. J. Hope	*C.* 10,355
Deritend	J. S. Crooke	*C.* 4,781
Duddeston	O. E. Simmonds	*C.* 3,262
Edgbaston	Rt. Hon. Neville Chamberlain	*C.* 21,862
Erdington	Squadron-Ldr. J. A. C. Wright	*C.* 6,234
	(*By-election, Oct.* 20, 1936)	
Handsworth	Com. O. Locker-Lampson	*C.* 15,225
King's Norton	J. R. H. Cartland	*C.* 5,875
Ladywood	G. W. Lloyd	*C.* 11,254
Moseley	Sir P. J. H. Hannon	*C.* 26,342
Sparkbrook	Lt.-Col. Rt. Hon. L. C. S. Amery	*C.* 9,446
West	W. F. Higgs	*C.* 2,920
	(*By-election, April* 29, 1937)	
Yardley	E. W. Salt	*C.* 6,838
Blackburn (2)	Capt. G. S. Elliston	*C.* 3,361
	Lt.-Col. Sir W. D. Smiles	*C.* 3,198
Blackpool	J. R. Robinson	*C.* 34,916
Bolton (2)	Maj. Sir C. F. Entwistle	*C.* 14,239
	Sir John Haslam	*C.* 12,575
Bootle	Eric Errington	*C.* 3,368
Bournemouth	Brig.-Gen. Sir H. Page-Croft, Bt.	*C.* 19,366
Bradford, *Central*	W. Leach	*Lab.* 1,156
,, *East*	J. Hepworth	*C.* 2,148
,, *North*	Sir E. J. S. H. Ramsden	*C.* 7,103
,, *South*	H. Holdsworth	*L.* 6,960
Brecon and Radnor	Hon. Ivor Guest	*Nat.* 2,169
Brighton (2)	Maj. Rt. Hon. G. C. Tryon	*C.* 40,626
	Com. Sir Cooper Rawson	*C.* 40,437
Bristol, *Central*	Lord Apsley	*C.* 1,516
,, *East*	Hon. Sir S. Cripps	*Lab.* 6,883
,, *North*	R. H. Bernays	*L.* 4,828
,, *South*	A. G. Walkden	*Lab.* 2,433
,, *West*	C. T. Culverwell	*C.* 21,762
Bromley	Sir E. T. Campbell	*C.* 27,941
Buckinghamshire		
Aylesbury	M. W. Beaumont	*C.* 11,106
Buckingham	Maj. J. P. Whiteley	*C.* 9,099
	(*By-election, June* 11, 1937)	
Wycombe	Maj.-Gen. Sir A. W. F. Knox	*C.* 15,903
Burnley	W. A. Burke	*Lab.* 4,195
Bury	A. E. L. Chorlton	*C.* 5,580
Caernarvon	Elwyn Jones	*Lab.* 1,497
Caernarvon District	Rt. Hon. David Lloyd George	*Ind. L.* 9,609
Caithness & Sutherland	Rt. Hon. Sir A. H. M. Sinclair, Bt.	*L.* 7,490
Camberwell, *Dulwich*	Bracewell Smith	*C.* 9,729
,, *North*	C. G. Ammon	*Lab.* 5,777
,, *North-west*	Maj. Hon. O. M. Guest	*C.* 813
,, *Peckham*	L. Silkin	*Lab.* 100
	(*By-election, May* 6, 1936)	
Cambridge	Lt.-Com. R. L. Tufnell	*C.* 5,491
Cambridgeshire	Capt. R. G. Briscoe	*C.* 7,650
Cambridge University (2)	Sir John James Withers	*C.* 4,149
	K. W. M. Pickthorn	*C.* 3,464
Cardiff, *Central*	Capt. Sir. E. N. Bennett	*N. Lab.* 4,860
,, *East*	O. T. Morris	*C.* 4,686
,, *South*	Capt. Arthur Evans	*C.* 541
Cardigan	D. Owen Evans	*L.* 5,761
Carlisle	Brig.-Gen. E. L. Spears	*C.* 3,635
Carmarthen		
Carmarthen	Maj. D. Hopkins	*Lab.* 5,235
Llanelly	James Griffiths	*Lab.* 16,221
	(*By-election, March* 26, 1936)	
Chelsea	Col. Rt. Hon. Sir Samuel Hoare, Bt.	*C.* 12,644
Cheltenham	D. L. Lipson	*Ind. C.* 339
	(*By-election, June* 22, 1937)	
Cheshire		
Altrincham	Lt.-Col. Sir E. W. M. Grigg	*C.* 29,226
City of Chester	Sir C. Cayzer, Bt.	*C.* 6,699
Crewe	Sir Donald B. Somervell	*C.* 1,109
Eddisbury	R. J. Russell	*L. Nat.* unopp.
Knutsford	Brig.-Gen. E. Makins	*C.* 12,999
Macclesfield	J. R. Renner	*C.* 9,488
Northwich	Lord Colum Crichton-Stuart	*C.* 4,027
Stalybridge and Hyde	T. Cox	334
	(*By-election, April* 28, 1937)	
Wirral	Capt. A. C. Graham	*C.* 25,816
City of London (2)	Sir V. Bowater, Bt.	*C.* unopp.
	Sir A. G. Anderson	*C.* unopp.
Combined English Universities (2)	Eleanor Rathbone	*Ind.* unopp.
	T. E. Harvey	*Ind.* 1,644
	(*By-election, March* 22, 1937)	
Cornwall		
Bodmin	J. R. Rathbone	*C.* 2,753
Camborne	Lt.-Com. P. G. Agnew	*C.* 6,905
Northern	Rt. Hon. Sir F. D. Acland, Bt.	*L.* 836
Penryn and Falmouth	M. Petherick	*C.* 3,031
St. Ives	A. L. Beechman	*L.* 210
	(*By-election, June* 30, 1937)	
Coventry	Capt. W. F. Strickland	*C.* 2,472
Croydon, *North*	Lt.-Col. G. K. M. Mason	*C.* 18,511
,, *South*	H. G. Williams	*C.* 17,071
Cumberland		
Northern	W. H. W. Roberts	*L.* 894
Penrith & Cockermouth	Capt. A. V. G. Dower	*C.* 6,460
Whitehaven	Frank Anderson	*Lab.* 352
Workington	Tom Cape	*Lab.* unopp.
Darlington	C. U. Peat	*C.* 4,215
Denbigh, *Denbigh*	Sir J. H. Morris-Jones	*L. Nat.* 5,043
,, *Wrexham*	R. Richards	*Lab.* 5,283
Deptford	W. H. Green	*Lab.* 6,892
Derby (2)	W. A. Reid	*C.* 12,670
	P. J. Noel-Baker	*Lab.* 2,753
	(*By-election, July* 9, 1936)	
Derbyshire		
Belper	Herbert Wragg	*C.* 828
Chesterfield	George Benson	*Lab.* 4,884
Clay Cross	G. Ridley	*Lab.* 16,248

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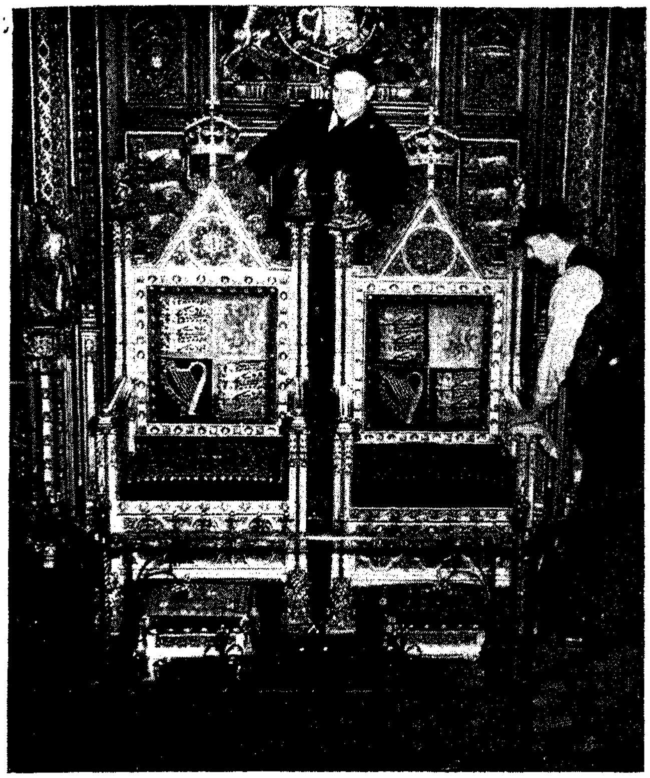
LONDON. THE HOUSES OF PARLIAMENT

Constituency	Member	Majority
Derbyshire		
High Peak	Sir Alfred LAW	*C.* 9,586
Ilkeston	G. H. OLLIVER	*Lab.* 10,331
North-eastern	Frank LEE	*Lab.* 9,580
Southern	P. V. EMRYS-EVANS	*C.* 1,859
Western	Marquess of HARTINGTON	*C.* unopp.
Devonshire		
Barnstaple	R. T. Dyke ACLAND	*L.* 454
Honiton	C. DREWE	*C.* 13,889
South Molton	Rt. Hon. George LAMBERT	*L. Nat.* 15,157
Tavistock	C. M. PATRICK	*C.* 4,053
Tiverton	Lt.-Col. G. J. ACLAND-TROYTE	*C.* unopp.
Torquay	Charles WILLIAMS	*C.* 17,935
Totnes	Maj. R. RAYNER	*C.* 7,716
Dewsbury	Ben RILEY	*Lab.* 5,268
Dorset, *Eastern*	G. R. HALL CAINE	*C.* 14,173
,, *Northern*	Capt. A. V. HAMBRO	*C.* 543
	(*By-election, July* 13, 1937)	
,, *Southern*	Viscount CRANBORNE	*C.* 9,057
,, *Western*	Maj. W. P. COLFOX	*C.* 3,608
Down (2)	Sir D. D. REID, Bt.	*C.* 46,088
	Viscount CASTLEREAGH	*C.* 45,593
Dudley	D. J. B. JOEL	*C.* 2,449
Dumbarton	T. CASSELS	*Lab.* 984
	(*By-election, March* 18, 1936)	
Dumbarton District	D. KIRKWOOD	*Lab.* 9,500
Dumfries	Sir Henry FILDES	*L. Nat.* 10,368
Dundee (2)	Florence HORSBRUGH	*C.* 6,085
	D. M. FOOT	*L.* 5,175
Dunfermline District	W. McL. WATSON	*Lab.* 1,423
Durham		
Barnard Castle	T. M. SEXTON	*Lab.* 1,320
Bishop Auckland	Dr. Hugh DALTON	*Lab.* 8,086
Blaydon	W. WHITELEY	*Lab.* 9,526
Chester-le-Street	John L. LAWSON	*Lab.* 17,210
Consett	David ADAMS	*Lab.* 7,522
Durham	J. RITSON	*Lab.* 6,607
Houghton-le-Spring	W. J. STEWART	*Lab.* 7,675
Jarrow	Ellen WILKINSON	*Lab.* 2,350
Seaham	E. SHINWELL	*Lab.* 20,498
Sedgefield	J. R. LESLIE	*Lab.* 1,771
Spennymoor	J. BATEY	*Lab.* 12,777
Ealing	Sir F. B. SANDERSON, Bt.	*C.* 18,500
East Ham, *North*	Lt.-Col. J. MAYHEW	*C.* 533
,, *South*	A. J. BARNES	*Lab.* 5,956
Eccles	R. A. CARY	*C.* 2,255
Edinburgh, *Central*	J. C. Morrison GUY	*C.* 2,953
,, *East*	Rt. Hon. F. W. PETHICK-LAWRENCE	*Lab.* 1,112
,, *North*	A. G. Erskine HILL	*C.* 12,122
,, *South*	Sir Samuel CHAPMAN	*C.* 21,889
,, *West*	Rt. Hon. T. M. COOPER	*C.* 14,229
Edmonton	F. A. BROAD	*Lab.* 4,127
Essex, *Chelmsford*	Capt. J. R. J. MACNAMARA	*C.* 16,624
,, *Colchester*	Oswald LEWIS	*C.* 5,876
,, *Epping*	Rt. Hon. W. S. CHURCHILL	*C.* 20,419
,, *Harwich*	J. S. HOLMES	*L. Nat.* 12,546
,, *Maldon*	Col. Sir E. A. RUGGLES-BRISE, Bt.	*C.* 7,808
Essex, *Romford*	H. J. PARKER	*Lab.* 8,307
,, *Saffron Walden*	R. A. BUTLER	*C.* 10,036
,, *South-eastern*	H. V. A. M. RAIKES	*C.* 970
Exeter	A. C. REED	*C.* 7,518
Fermanagh & Tyrone (2)	P. CUNNINGHAM	*N. Abst.* 4,266
	A. J. MULVEY	*N. Abst.* 3,978
Fife, *Eastern*	J. H. STEWART	*L. Nat.* 21 896
,, *Western*	W. GALLACHER	*Com.* 593
Finsbury	Rev. G. S. WOODS	*Lab.* 2,808
Flint	G. ROWLANDS	*C.* 10,108
Fulham, *East*	Hon. W. W. ASTOR	*C.* 1,054
,, *West*	Sir Cyril S. COBB	*C.* 3,483
Galloway	J. H. McKIE	*C.* unopp.
Gateshead	T. MAGNAY	*L. Nat.* 2,968
Glamorgan		
Aberavon	W. G. COVE	*Lab.* unopp.
Caerphilly	Morgan JONES	*Lab.* 17,108
Gower	D. R. GRENFELL	*Lab.* 13,393
Llandaff and Barry	P. M. MUNRO	*C.* 1,422
Neath	Sir W. JENKINS	*Lab.* unopp.
Ogmore	E. J. WILLIAMS	*Lab.* unopp.
Pontypridd	(*Vacant*)	
Glasgow, *Bridgeton*	James MAXTON	*I.L.P.* 8,740
,, *Camlachie*	Rev. Campbell STEPHEN	*I.L.P.* 884
,, *Cathcart*	Sir John TRAIN	*C.* 8,336
,, *Central*	Brig.-Gen. Sir W. ALEXANDER	*C.* 3,521
,, *Gorbals*	G. BUCHANAN	*I.L.P.* 17,036
,, *Govan*	Neil MACLEAN	*Lab.* 5,580
,, *Hillhead*	J. S. C. REID	*C.* 6,337
	(*By-election, June* 10, 1937)	
,, *Kelvingrove*	Rt. Hon. W. E. ELLIOT	*C.* 149
,, *Maryhill*	J. J. DAVIDSON	*Lab.* 3,971
,, *Partick*	A. S. L. YOUNG	*C.* 2,300
,, *Pollok*	Lt.-Col. Rt. Hon. Sir John GILMOUR, Bt.	*C.* 13,738
,, *St. Rollox*	William LEONARD	*Lab.* 6,297
,, *Shettleston*	J. McGOVERN	*I.L.P.* 4,575
,, *Springburn*	Mrs. G. D. HARDIE	*Lab.* 5,978
	(*By-election, Sept.* 7, 1937)	
,, *Tradeston*	T. HENDERSON	*Lab.* 1,899
Gloucester	H. Leslie BOYCE	*C.* 3,879
Gloucestershire		
Cirencester & Tewkesbury	Rt. Hon. W. S. MORRISON	C. unopp.
Forest of Dean	M. P. PRICE	*Lab.* 4,431
Stroud	W. R. D. PERKINS	*C.* 10,149
Thornbury	D. W. GUNSTON	*C.* 4,016
Great Yarmouth	Arthur HARBORD	*L. Nat.* 5,330
Greenock	R. GIBSON	*Lab.* 2,604
	(*By-election, Nov.* 26, 1936)	
Greenwich	Sir George HUME	*C.* 2,088
Grimsby	Sir W. J. WOMERSLEY	*C.* 1,727
Hackney, *Central*	F. C. WATKINS	*Lab.* 957
,, *North*	Capt. A. U. M. HUDSON	*C.* 1,080
,, *South*	Rt. Hon. Herbert MORRISON	*Lab.* 4,954
Halifax	Gilbert GLEDHILL	*C.* 2,632
Hammersmith, *North*	D. N. PRITT	*Lab.* 1,634
,, *South*	J. D. COOKE	*C.* 6,068

Constituency	Member	Majority
Hampshire		
Aldershot	Rt. Hon. Viscount Wolmer	*C.* 11,309
Basingstoke	P. W. Donner	*C.* 8,232
Fareham	Rt. Hon. Sir T. W. H. Inskip	*C.* 21,233
New Forest and Christchurch	Maj. J. D. Mills	*C.* 21,333
Petersfield	Maj. Sir R. H. Dorman-Smith	*C.* 16,816
Winchester	G. E. H. Palmer	*C.* 12,767
Hampstead	George Balfour	*C.* 21,347
Hartlepools, The	W. G. Howard Gritten	*C.* 4,897
Hastings	M. R. Hely-Hutchinson	*C.* 7,184
	(*By-election, Nov.* 24, 1937)	
Hereford, *Hereford*	J. P. L. Thomas	*C.* 9,381
,, *Leominster*	Sir E. W. Shepperson	*C.* 3,567
Hertford		
Hemel Hempstead	The Viscountess Davidson	*C.* 7,645
	(*By-election, June* 22, 1937)	
Hertford	Rear-Adm. Sir Murray F. Sueter	*C.* 9,701
Hitchin	Lt.-Col. Sir A. T. Wilson	*C.* 9,035
St. Albans	Lt.-Col. Sir F. E. Fremantle	*C.* 17,510
Watford	Rt. Hon. Sir Dennis Herbert	*C.* 13,290
Holborn	Maj. Sir R. I. Tasker	*C.* 7,329
Hornsey	Capt. Rt. Hon. D. Euan Wallace	*C.* 20,174
Huddersfield	W. Mabane	*L. Nat.* 13,165
Huntingdonshire	Dr. S. J. Peters	*L. Nat.* 9,426
Hythe	Maj. Rt. Hon. Sir P. Sassoon, Bt.	*C.* 6,671
Ilford	G. Hutchinson	*C.* 9,319
	(*By-election, June* 29, 1937)	
Inverness and Ross and Cromarty		
Inverness	Sir M. Macdonald	*L. Nat.* 7,688
Ross and Cromarty	Rt. Hon. Malcolm MacDonald	*N. Lab.* 2,982
	(*By-election, Feb.* 10, 1936)	
Western Isles	M. K. MacMillan	*Lab.* 1,345
Ipswich	Sir John Ganzoni, Bt.	*C.* 7,250
	(*Vacant, Jan.* 1938, *on member's elevation to peerage*)	
Isle of Ely	James A. E. de Rothschild	*L.* 699
Isle of Wight	Capt. P. D. Macdonald	*C.* 11,162
Islington, *East*	Thelma Cazalet	*C.* 4,438
,, *North*	Dr. L. Haden Guest	*Lab.* 1,296
	(*By-election, Oct.* 13, 1937)	
,, *South*	W. S. Cluse	*Lab.* 1,128
,, *West*	F. Montague	*Lab.* 2,060
Kensington, *North*	J. A. L. Duncan	*C.* 3,598
,, *South*	Sir W. H. Davison	*C.* 33,518
Kent, *Ashford*	W. P. Spens	*C.* 12,985
,, *Canterbury*	Lt.-Col. Sir W. Wayland	*C.* 17,388
,, *Chislehurst*	Sir Waldron Smithers	*C.* 26,478
,, *Dartford*	F. E. Clarke	*C.* 2,646
,, *Dover*	Maj. Hon. J. Astor	*C.* 11,296
,, *Faversham*	Adam Maitland	*C.* 3,821
,, *Gravesend*	Sir Irving J. Albery	*C.* 4,444
,, *Isle of Thanet*	Capt. H. H. Balfour	*C.* unopp.
,, *Maidstone*	Alfred C. Bossom	*C.* 15,304
,, *Sevenoaks*	Col. Charles Ponsonby	*C.* 11,108
,, *Tonbridge*	Sir A. W. Maxwell Baillie, Bt.	*C.* 10,655
	(*By-election, March* 23, 1937)	
Kingston-upon-Hull		
Central	W. Windsor	*Lab.* 1,620
East	G. Muff	*Lab.* 3,606
North-west	Col. Sir A. Lambert Ward, Bt.	*C.* 5,234
South-west	Richard K. Law	*C.* 3,431
Kingston-upon-Thames	Adm. P. M. R. Royds	*C.* 9,915
	(*By-election, July* 1, 1937)	
Kirkcaldy District	Rt. Hon. Tom Kennedy	*Lab.* 4,371
Lambeth, *Brixton*	N. C. Colman	*C.* 6,506
,, *Kennington*	Sir George Harvey	*C.* 545
,, *North*	G. R. Strauss	*Lab.* 2,056
,, *Norwood*	D. Sandys	*C.* 12,456
Lanark, *Bothwell*	J. C. Welsh	*Lab.* 7,139
,, *Coatbridge*	Rev. J. Barr	*Lab.* 4,414
,, *Hamilton*	Duncan Graham	*Lab.* 8,165
,, *Lanark*	Lord Dunglass	*C.* 6,809
,, *Motherwell*	J. Walker	*Lab.* 430
,, *Northern*	W. J. Anstruther-Gray	*C.* 5,034
,, *Rutherglen*	A. Chapman	*C.* 581
Lancashire		
Chorley	Rt. Hon. D. H. Hacking	*C.* 5,775
Clitheroe	Capt. Sir W. Brass	*C.* 3,752
Darwen	S. H. M. Russell	*C.* 1,164
Farnworth	(*Vacant*)	
Fylde	Rt. Hon. Lord Stanley	*C.* 23,352
Heywood & Radcliffe	R. W. Porritt	*C.* 9,416
Ince	Gordon Macdonald	*Lab.* 16,406
Lancaster	H. Ramsbotham	*C.* 13,578
Lonsdale	Lord Balniel	*C.* 9,392
Middleton & Prestwich	Sir A. N. Stewart-Sandeman, Bt.	*C.* 9,971
Mossley	Austin Hopkinson	*Nat.* 2,170
Newton	Sir Robert Young	*Lab.* 5,791
Ormskirk	Sir S. T. Rosbotham	*N. Lab.* 8,045
Royton	H. Sutcliffe	*C.* 10,600
Stretford	A. C. Crossley	*C.* 15,596
Waterloo	Capt. H. M. Bullock	*C.* unopp.
Westhoughton	R. J. Davies	*Lab.* 7,242
Widnes	R. A. Pilkington	*C.* 527
Leeds, *Central*	Hon. Richard Denman	*N. Lab.* 4,046
,, *North*	Capt. Osbert Peake	*C.* 16,844
,, *North-east*	Maj. Sir J. D. Birchall	*C.* 11,835
,, *South*	H. C. Charleton	*Lab.* 1,016
,, *South-east*	Maj. J. Milner	*Lab.* 9,360
,, *West*	S. V. T. Adams	*C.* 3,234
Leicester, *East*	A. M. Lyons	*C.* 2,910
,, *South*	Capt. C. Waterhouse	*C.* 11,473
,, *West*	Hon. Harold Nicolson	*N. Lab.* 87
Leicestershire		
Bosworth	Sir William Edge, Bt.	*L. Nat.* 7,153
Harborough	Ronald Tree	*C.* 10,590
Loughborough	Lawrence Kimball	*C.* 743
Melton	W. Lindsay Everard	*C.* 13,621
Leigh	J. J. Tinker	*Lab.* unopp.
Leith	Rt. Hon. Ernest Brown	*L. Nat.* 5,070
Lewisham, *East*	Lt.-Col. Sir Assheton Pownall	*C.* 6,449
,, *West*	Sir Philip Dawson	*C.* 12,370
Leyton, *East*	Sir F. Mills, Bt.	*C.* 329
,, *West*	Rev. R. W. Sorensen	*Lab.* 128
Lincoln	W. S. Liddall	*C.* 2,684
Lincolnshire		
Brigg	D. J. K. Quibell	*Lab.* 203
Gainsborough	Capt. H. F. C. Crookshank	*C.* 1,757
Grantham	Sir Victor Warrender, Bt.	*C.* 6,185
Holland with Boston	H. G. Butcher	*L. Nat.* 7,290
	(*By-election, June* 24, 1937)	
Horncastle	Henry C. Haslam	*C.* 9,612
Louth	Lt.-Col. A. P Heneage	*C.* 7,444
Rutland and Stamford	Lord Willoughby de Eresby	*C.* 5,561
Linlithgow	G. Mathers	*Lab.* 3,175
Liverpool, *East Toxteth*	P. G. T. Buchan-Hepburn	*C.* 7,016
,, *Edgehill*	A. Critchley	*C.* 301
,, *Everton*	B. V. Kirby	*Lab.* 177
,, *Exchange*	Col. Sir J. J. Shute	*C.* 4,412
,, *Fairfield*	Sir C. E. R. Brocklebank	*C.* 7,441
,, *Kirkdale*	Sir R. Rankin, Bt.	*C.* 556
,, *Scotland*	D. G. Logan	*Lab.* 7,664
,, *Walton*	R. Purbrick	*C.* 8,544
,, *Wavertree*	Maj. P. S. Shaw	*C.* 7,847
,, *West Derby*	D. P. M. Fyfe	*C.* 10,978
,, *West Toxteth*	J. Gibbins	*Lab.* 2,004
Londonderry	Maj. Sir Ronald Ross, Bt.	*C.* unopp.
London University	Sir E. G. Graham-Little	*Ind. C.* 5,040
Manchester, *Ardwick*	Joseph Henderson	*Lab.* 1,808
,, *Blackley*	J. Lees-Jones	*C.* 5,462
,, *Clayton*	J. H. Jagger	*Lab.* 2,668
,, *Exchange*	P. T. Eckersley	*C.* 7,643
,, *Gorton*	Capt. Rt. Hon. W. W. Benn	*Lab.* 4,758
	(*By-election, Feb.* 18, 1937)	
,, *Hulme*	Col. Sir J. Nall	*C.* 5,851
,, *Moss Side*	W. R. Duckworth	*C.* 4,505
,, *Platting*	Rt. Hon. J. R. Clynes	*Lab.* 1,337
,, *Rusholme*	E. A. Radford	*C.* 10,420
,, *Withington*	E. L. Fleming	*C.* 23,316
Merioneth	Sir H. Haydn Jones	*L.* 1,149
Merthyr Tydfil		
Aberdare	G. H. Hall	*Lab.* unopp.
Merthyr	S. O. Davies	*Lab.* 10,890
Middlesbrough, *East*	A. Edwards	*Lab.* 67
,, *West*	F. Kingsley Griffith	*L.* 925
Middlesex		
Acton	H. J. Duggan	*C.* 5,578
Brentford & Chiswick	H. P. Mitchell	*C.* 8,272
Enfield	B. Bull	*C.* 5,503
Finchley	J. F. E. Crowder	*C.* 18,040
Harrow	Maj. Sir I. Salmon	*C.* 21,307
Hendon	Sir Reginald Blair	*C.* 41,387
Spelthorne	Sir Reginald Blaker	*C.* 16,196
Twickenham	E. H. Keeling	*C.* 14,812
Uxbridge	Col. J. J. Llewellin	*C.* 10,727
Wood Green	A. Beverley Baxter	*C.* 21,823
Midlothian and Peebles		
Northern	Lt.-Col. Rt. Hon. David John Colville	*C.* 9,741
Peebles and Southern	Capt. A. H. M. Ramsay	*C.* 1,462
Monmouth, *Abertillery*	George Daggar	*Lab.* unopp.
,, *Bedwellty*	Sir Charles Edwards	*Lab.* unopp.
,, *Ebbw Vale*	Aneurin Bevan	*Lab.* 1,786
,, *Monmouth*	Maj. A. J. Herbert	*C.* 9,808
,, *Pontypool*	A. Jenkins	*Lab.* 1,791
Montgomery	E. C. Davies	*L. Nat.* unopp.
Montrose District	Lt.-Col. Charles Iain Kerr	*L. Nat.* 8,566
Moray and Nairn	Hon. James Stuart	*C.* 5,408
Morpeth	R. J. Taylor	*Lab.* 8,956
Nelson and Colne	S. S. Silverman	*Lab.* 4,315
Newcastle-under-Lyme	Col. Rt. Hon. J. C. Wedgwood	*Lab.* unopp.
Newcastle-upon-Tyne		
Central	A. Denville	*C.* 4,955
East	Sir R. W. Aske, Bt.	*L. Nat.* 7,094
North	Sir N. Grattan-Doyle	*C.* 17,990
West	Dr. J. W. Leech	*C.* 8,474
Newport	Sir Reginald J. Clarry	*C.* 1,545
Norfolk, *Eastern*	Viscount Elmley	*L. Nat.* 22,647
,, *King's Lynn*	Capt. Hon. S. A. Maxwell	*C.* 5,430
,, *Northern*	T. R. A. M. Cook	*C.* 3,398
,, *Southern*	J. A. Christie	*C.* 5,011
,, *South-western*	Somerset S. de Chair	*C.* 4,117
Northampton	Lt.-Col. Sir Mervyn Manningham-Buller, Bt.	*C.* 1,455
Northamptonshire		
Daventry	Capt. Rt. Hon. E. A. FitzRoy	*C.* 8,177
Kettering	J. F. Eastwood	*C.* 1,843
Peterborough	Lord Burghley	*C.* 5,304
Wellingborough	Wing-Comm. A. W. H. James	*C.* 372
Northumberland		
Berwick-upon-Tweed	Sir Hugh Seely, Bt.	*L.* 634
Hexham	Col. D. C. Brown	*C.* 6,917
Wansbeck	Lt.-Col. B. Cruddas	*C.* 955
Norwich (2)	G. H. Shakespeare	*L. Nat.* 11,369
	H. G. Strauss	*C.* 9,512
Nottingham, *Central*	Sir T. J. O'Connor	*C.* 8,513
,, *East*	L. H. Gluckstein	*C.* 9,291
,, *South*	S. F. Markham	*N. Lab.* 4,596
,, *West*	A. Hayday	*Lab.* 2,701
Nottinghamshire		
Bassetlaw	F. J. Bellenger	*Lab.* 1,139
Broxtowe	Frederick Seymour Cocks	*Lab.* 11,050
Mansfield	Charles Brown	*Lab.* 16,841
Newark	Marquess of Titchfield	*C.* 8,666
Rushcliffe	R. Assheton	*C.* 12,971
Oldham (2)	H. W. Kerr	*C.* 2,422
	J. S. Dodd	*L. Nat.* 439
Orkney and Shetland	Maj. B. H. Neven-Spence	*C.* 2,226
Oxford	Capt. Rt. Hon. R. C. Bourne	*C.* 6,645
Oxfordshire, *Banbury*	Maj. Sir A. J. Edmondson	*C.* 10,448

Constituency	Member	Majority
Oxfordshire, *Henley*	Sir GIFFORD FOX, Bt.	*C.* 12,770
Oxford University (2)	A. P. HERBERT	*Ind.* 3,219
	Sir Arthur SALTER	*Ind.* 3,663
	(*By-election, Feb.* 23-27, 1937)	
Paddington, *North*	B. BRACKEN	*C.* 7,228
,, *South*	Vice-Adm. E. A. TAYLOR	*C.* 15,622
Paisley	Hon. J. P. MACLAY	*L.* 389
Pembroke	Maj. G. LLOYD GEORGE	*Ind. L.* 1,074
Perth and Kinross		
Kinross and Western	Duchess of ATHOLL	*C.* 5,169
Perth	T. HUNTER	*C.* 14,802
Plymouth, *Devonport*	Maj. Rt. Hon. L. HORE-BELISHA	*L. Nat.* 11,096
,, *Drake*	Lt.-Col. Hon. C. H. C. GUEST	*C.* 4,734
	(*By-election, June* 15, 1937)	
,, *Sutton*	Viscountess ASTOR	*C.* 6,097
Poplar, *Bow & Bromley*	Rt. Hon. George LANSBURY	*Lab.* 13,357
,, *South*	D. M. ADAMS	*Lab.* 11,853
Portsmouth, *Central*	Hon. R. E. B. BEAUMONT	*C.* 10,845
,, *North*	Adm. of the Fleet Sir Roger KEYES, Bt.	*C.* 11,454
,, *South*	Maj. Sir H. R. CAYZER, Bt.	*C.* 18,373
Preston (2)	A. C. MOREING	*C.* 4,994
	Capt. E. C. COBB	*C.* 1,605
Queen's University, Belfast	Col. T. SINCLAIR	*C.* unopp.
Reading	Dr. A. B. HOWITT	*C.* 4,591
Renfrew, *Eastern*	Marquess of CLYDESDALE	*C.* 13,646
,, *Western*	H. J. SCRYMGEOUR-WEDDERBURN	*C.* 3,499
Rhondda, *East*	W. H. MAINWARING	*Lab.* 8,433
,, *West*	Will JOHN	*Lab.* unopp.
Richmond (Surrey)	Maj. G. S. HARVIE-WATT	*C.* 12,837
	(*By-election, Feb.* 25, 1937)	
Rochdale	W. T. KELLY	*Lab.* 1,795
Rochester, *Chatham*	Capt. L. F. PLUGGE	*C.* 5,897
,, *Gillingham*	Sir Robert GOWER	*C.* 8,694
Rossendale	R. H. CROSS	*C.* 881
Rotherham	W. DOBBIE	*Lab.* 15,472
Roxburgh and Selkirk	Lord William MONTAGU-DOUGLAS-SCOTT	*C.* 6,078
St. Helens	W. A. ROBINSON	*Lab.* 3,981
St. Marylebone	Capt. A. S. CUNNINGHAM-REID	*C.* 23,175
St. Pancras, *North*	R. GRANT-FERRIS	*C.* 268
	(*By-election, Feb.* 4, 1937)	
,, *South-east*	Sir A. L. BEIT, Bt.	*C.* 1,636
,, *South-west*	Sir G. G. MITCHESON	*C.* 2,365
Salford, *North*	J. P. MORRIS	*C.* 4,632
,, *South*	Hon. J. J. STOURTON	*C.* 304
,, *West*	J. F. EMERY	*C.* 4,513
Salop, *Ludlow*	Lt.-Col. G. WINDSOR-CLIVE	*C.* 10,209
,, *Oswestry*	Maj. B. E. P. LEIGHTON	*C.* unopp.
,, *Shrewsbury*	G. A. V. DUCKWORTH	*C.* 8,795
,, *The Wrekin*	Col. J. BALDWIN-WEBB	*C.* 5,625
Scottish Universities (3)	J. Graham KERR	*C.* 4,387
	Dr. G. A. MORRISON	*L.* 3,664
	(*One seat vacant*)	
Sheffield, *Attercliffe*	C. H. WILSON	*Lab.* 7,629
,, *Brightside*	F. MARSHALL	*Lab.* 5,518
,, *Central*	W. W. BOULTON	*C.* 420
,, *Ecclesall*	Sir Geoffrey ELLIS, Bt.	*C.* 14,646
,, *Hallam*	L. W. SMITH	*C.* 10,952
,, *Hillsborough*	Rt. Hon. A. V. ALEXANDER	*Lab.* 3,304
,, *Park*	G. LATHAN	*Lab.* 1,206
Shoreditch	E. THURTLE	*Lab.* 6,929
Smethwick	A. R. WISE	*C.* 1,552
Somerset		
Bridgwater	R. P. CROOM-JOHNSON	*C.* 10,569
Frome	Mrs. H. B. TATE	*C.* 994
Taunton	Lt.-Col. E. T. R. WICKHAM	*C.* 8,224
Wells	Lt.-Col. A. J. MUIRHEAD	*C.* 7,621
Weston-super-Mare	I. L. ORR-EWING	*C.* 19,852
Yeovil	Maj. Sir G. F. DAVIES	*C.* 5,158
Southampton (2)	W. CRAVEN-ELLIS	*C.* 14,145
	Sir Charles BARRIE	*L. Nat.* 12,946
Southend-on-Sea	H. CHANNON	*C.* 24,931
Southport	R. S. HUDSON	*C.* 18,233
South Shields	J. Chuter EDE	*Lab.* 9,099
Southwark, *Central*	Harry DAY	*Lab.* 1,363
,, *North*	E. A. STRAUSS	*L. Nat.* 79
,, *South-east*	T. E. NAYLOR	*Lab.* 4,997
Stafford, *Burton*	Col. Rt. Hon. J. GRETTON	*C.* 15,498
,, *Cannock*	W. M. ADAMSON	*Lab.* 1,046
,, *Kingswinford*	Arthur HENDERSON	*Lab.* 16
,, *Leek*	W. BROMFIELD	*Lab.* 6,013
,, *Lichfield*	J. A. LOVAT-FRASER	*N. Lab.* 3,298
,, *Stafford*	Rt. Hon. W. G. A. ORMSBY-GORE	*C.* 3,661
,, *Stone*	Sir J. Q. LAMB	*C.* 7,399
Stepney		
Limehouse	Maj. Rt. Hon. C. R. ATTLEE	*Lab.* 7,245
Mile End	D. FRANKEL	*Lab.* 3,318
Whitechapel and St. George's	J. H. HALL	*Lab.* 2,281
Stirling & Clackmannan		
Clackmannan & Eastern	L. MacNeill WEIR	*Lab.* 1,143
Western	Rt. Hon. T. JOHNSTON	*Lab.* 2,962
Stirling & Falkirk District	J. WESTWOOD	*Lab.* 871
Stockport (2)	Sir Arnold GRIDLEY	*C.* 15,084
	N. J. HULBERT	*C.* 14,203
Stockton-on-Tees	Capt. H. MACMILLAN	*C.* 4,068
Stoke Newington	Sir G. W. H. JONES	*C.* 3,765
Stoke-upon-Trent		
Burslem	Andrew McLAREN	*Lab.* 2,803
Hanley	Arthur HOLLINS	*Lab.* 1,331
Stoke	Ellis SMITH	*Lab.* 2,125
Suffolk, East		
Eye	E. L. GRENVILLE	*L. Nat.* 13,993
Lowestoft	P. C. LOFTUS	*C.* 7,716
Woodbridge	W. ROSS-TAYLOR	*C.* 13,907
Suffolk, West		
Bury St. Edmunds	Capt. F. F. A. HEILGERS	*C.* unopp.
Sudbury	Col. H. W. BURTON	*C.* 3,356
Sunderland (2)	S. N. FURNESS	*L. Nat.* 16,518
	Samuel STOREY	*C.* 16,277
Surrey, *Chertsey*	Com. A. MARSDEN	*C.* 9,045
	(*By-election, July* 2, 1937)	
,, *Eastern*	C. E. G. Campbell EMMOTT	*C.* 24,751
,, *Epsom*	Com. Sir A. R. J. SOUTHBY, Bt.	*C.* 30,662
,, *Farnham*	Godfrey NICHOLSON	*C.* 12,788
	(*By-election, March* 23, 1937)	
,, *Guildford*	Sir J. J. JARVIS, Bt.	*C.* 23,551
,, *Mitcham*	Sir R. J. MELLER	*C.* 9,152
,, *Reigate*	G. C. TOUCHE	*C.* 19,593
Sussex, East		
Eastbourne	C. S. TAYLOR	*C.* unopp.
East Grinstead	Lt.-Col. R. S. CLARKE	*C.* 16,499
	(*By-election, July* 23, 1936)	
Lewes	Rear-Adm. P. H. BEAMISH	*C.* 7,086
	(*By-election, June* 18, 1936)	
Rye	Col. Rt. Hon. Sir G. L. COURTHOPE, Bt.	*C.* 13,442
Sussex, West		
Chichester	Maj. J. S. COURTAULD	*C.* 27,398
Horsham & Worthing	Rt. Hon. Earl WINTERTON	*C.* 29,012
Swansea, *East*	David WILLIAMS	*Lab.* unopp.
,, *West*	L. JONES	*L. Nat.* 2,081
Tottenham, *North*	R. C. MORRISON	*Lab.* 8,009
,, *South*	Fred MESSER	*Lab.* 4,613
Tynemouth	Maj. Sir A. West RUSSELL	*C.* 5,858
Wakefield	Rt. Hon. A. GREENWOOD	*Lab.* 3,404
Wallasey	Lt.-Col. J. T. MOORE-BRABAZON	*C.* 14,458
Wallsend	Irene M. B. WARD	*C.* 2,379
Walsall	J. A. LECKIE	*L. Nat.* 8,969
Walthamstow, *East*	Sir B. C. BEAUCHAMP, Bt.	*C.* 2,488
,, *West*	V. La T. McENTEE	*Lab.* 6,739
Wandsworth		
Balham and Tooting	Lt.-Col. G. DOLAND	*C.* 2,070
	(*By-election, July* 23, 1936)	
Central	Maj. H. L. NATHAN	*Lab.* 485
	(*By-election, April* 29, 1937)	
Clapham	Sir J. LEIGH, Bt.	*C.* 6,090
Putney	Marcus R. A. SAMUEL	*C.* 11,393
Streatham	Sir W. LANE-MITCHELL	*C.* 17,478
Warrington	N. B. GOLDIE	*C.* 604
Warwick		
Nuneaton	Lt.-Com. R. T. H. FLETCHER	*Lab.* 5,237
Rugby	Capt. Rt. Hon. H. D. R. MARGESSON	*C.* 7,844
Tamworth	Sir J. S. Paget MELLOR, Bt.	*C.* 31,649
Warwick & Leamington	Rt. Hon. R. Anthony EDEN	*C.* 24,816
Wednesbury	J. W. BANFIELD	*Lab.* 2,800
Welsh University	Capt. Ernest EVANS	*L.* 1,028
West Bromwich	Rt. Hon. F. O. ROBERTS	*Lab.* 938
West Ham, *Plaistow*	Will THORNE	*Lab.* 11,763
,, *Silvertown*	J. J. JONES	*Lab.* 13,901
,, *Stratford*	T. E. GROVES	*Lab.* 5,975
,, *Upton*	B. W. GARDNER	*Lab.* 1,665
Westminster, *Abbey*	Capt. Sir S. HERBERT, Bt.	*C.* 12,862
,, *St. George's*	Rt. Hon. A. Duff COOPER	*C.* 20,781
Westmorland	Maj. Rt. Hon. O. F. G. STANLEY	*C.* 12,217
Wigan	J. A. PARKINSON	*Lab.* 10,304
Willesden, *East*	D. G. SOMERVILLE	*C.* 10,090
,, *West*	S. P. VIANT	*Lab.* 2,930
Wiltshire, *Chippenham*	Capt. V. A. CAZALET	*C.* 5,121
,, *Devizes*	Sir Percy A. HURD	*C.* 4,535
,, *Salisbury*	Maj. J. A. St. G. FITZWARRENNE-DESPENCER-ROBERTSON	*C.* 12,448
,, *Swindon*	W. W. WAKEFIELD	*C.* 975
,, *Westbury*	R. V. GRIMSTON	*C.* 5,065
Wimbledon	Sir J. C. POWER, Bt.	*C.* 19,364
Wolverhampton		
Bilston	I. C. HANNAH	*C.* 869
East	G. Le M. MANDER	*L.* 4,000
West	Sir R. BIRD, Bt.	*C.* 4,830
Woolwich, *East*	E. G. HICKS	*Lab.* 4,842
,, *West*	Rt. Hon. Sir H. Kingsley WOOD	*C.* 7,276
Worcester	W. P. C. GREENE	*C.* 6,513
Worcestershire		
Bewdley	R. J. E. CONANT	*C.* 6,543
	(*By-election, June* 24, 1937)	
Evesham	R. De la BERE	*C.* 12,523
Kidderminster	Sir J. S. WARDLAW-MILNE	*C.* 16,099
Stourbridge	Robert H. MORGAN	*C.* 5,301
York	Hon. C. I. C. WOOD	*C.* 4,059
	(*By-election, May* 6, 1937)	
Yorkshire, East Riding		
Buckrose	Maj. A. N. BRAITHWAITE	*C.* 3,327
Holderness	Sir S. Servington SAVERY	*C.* 11,901
Howdenshire	Maj. W. H. CARVER	*C.* 10,318
Yorkshire, North Riding		
Cleveland	Lt.-Com. R. T. BOWER	*C.* 2,732
Richmond	Maj. T. L. DUGDALE	*C.* 17,719
Scarborough & Whitby	Sir Paul LATHAM, Bt.	*C.* 6,542
Thirsk and Malton	Robert Hugh TURTON	*C.* unopp.
Yorkshire, West Riding		
Barkston Ash	Col. L. ROPNER	*C.* 9,189
Colne Valley	E. MARKLEW	*Lab.* 3,779
Doncaster	A. SHORT	*Lab.* 7,952
Don Valley	T. WILLIAMS	*Lab.* 18,259
Elland	T. LEVY	*C.* 1,742
Hemsworth	George Arthur GRIFFITHS	*Lab.* 21,266
Keighley	Rt. Hon. H. B. LEES-SMITH	*Lab.* 368
Normanton	Tom SMITH	*Lab.* 20,599
Penistone	H. G. McGHEE	*Lab.* 3,086
Pontefract	A. HILLS	*Lab.* 2,526
Pudsey and Otley	Sir C. Granville GIBSON	*C.* 11,425
Ripon	Maj. Rt. Hon. J. W. HILLS	*C.* 21,688
Rother Valley	E. DUNN	*Lab.* 20,364
Rothwell	William LUNN	*Lab.* 14,120
Shipley	A. C. JONES	*Lab.* 4,507
Skipton	G. W. RICHARDS	*C.* 5,059
Sowerby	M. S. McCORQUODALE	*C.* 2,672
Spen Valley	Rt. Hon. Sir John SIMON	*L. Nat.* 642
Wentworth	Wilfred PALING	*Lab.* 29,304



Fox Photos]

THE ROYAL THRONES IN THE HOUSE OF LORDS. THE KING'S THRONE (ON LEFT) IS TWO INCHES HIGHER THAN HIS CONSORT'S

House of Lords.—The number of peers entitled to sit in the House of Lords was (Oct. 1937) 775, comprised as follows: 4 princes of the blood royal, 2 archbishops, 20 dukes, 28 marquesses, 125 earls, 77 viscounts, 24 bishops, 464 barons, 16 Scottish representative peers, and 15 Irish representative peers. Only a fraction of this number, however, is at any time politically active in the House, the average attendance being about 80. The Speaker is the Lord Chancellor, and the Lord Chairman of Committees is the Earl of Onslow.

The leader of the House in 1937 was Viscount Halifax, later Foreign Secretary, and the Opposition leaders were Lord Snell (Labour) and the Marquess of Crewe (Liberal).

PATENTS. In the last six years some countries have revised and redrafted their patent laws; Great Britain (1932), Italy (1934), Canada (1935), Germany and Denmark (1936), and others have made minor changes in their statutes.

The registration system, in which patents are granted on demand without any examination of the subject-matter, obtains in France. The United States and Germany are countries in which a rigid and extensive examination of applications for patents is made and the patent refused if not found novel. In Great Britain, the Act of 1932 extended the scope of the former limited examination, so as to approximate more closely to that of other countries. The Latin countries in general follow the registration system, but the comprehensive revision of the patent laws of Italy in 1934 introduced the examination system, although it has not yet become effective.

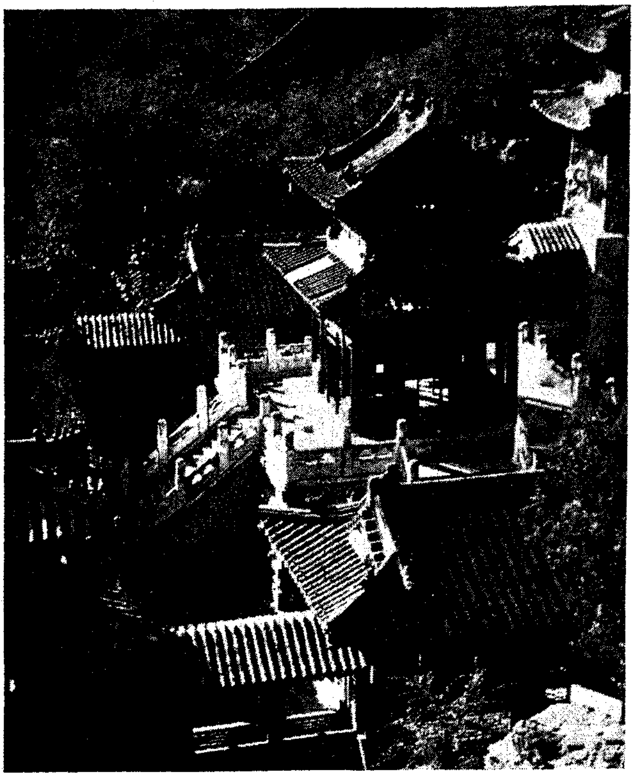
In the United States and in Canada the application must be made by the actual inventor, and in both countries an oath of inventorship is required. In other countries the applicant for a patent need not be the actual inventor, and the patent is ordinarily granted to the first to apply. Under the German law of 1936, and under the new Italian and Danish patent laws, the inventor has the right, capable of enforcement, of being named in the patent as the inventor, in those cases in which he is not himself the patentee. The London Conference of 1934 for the revision of the International Convention for the Protection of Industrial Property adopted a new article providing that 'The inventor has the right to be mentioned as such in the patent'.

In most countries the publication or public use of an invention before the date of the application is a bar to the grant of a patent. But the new German law now provides that publication or use by the inventor, for a period of six months prior to the date of the application, shall not constitute a bar to the grant of the patent. Likewise, the Italian law of 1934 exempts certain publications for a year prior to the filing date of an application. The United States and Canada have long provided a period of two years before the right to a patent is lost by publication or use.

The most recent data and estimates show that 173,149 patents were granted by all the countries of the world in 1935. The number of patents granted by some countries during that year were: Argentina, 1,280; Australia, 2,129; Austria, 4,000; Belgium, 5,961; Canada, 8,007; Czechoslovakia, 3,200; Denmark, 1,380; France, 18,000; Germany, 16,139; Gt. Britain, 17,675; Hungary, 2,270; Italy, 9,890; Japan, 4,766; Netherlands, 2,800; Norway, 1,260; Poland, 1,723; Spain, 2,001; Sweden, 2,944; Switzerland, 7,448; United States, 44,944; U.S.S.R., 4,668. The total number of patents granted by all the countries up to and including 1937 can be estimated as approximately 7½ millions; these, however, do not involve that number of distinct inventions, since an invention must be patented in each country to be protected in that country, and numerous inventions are thus patented in a number of different countries.

PEEL, WILLIAM ROBERT WELLESLEY PEEL, 1st Earl, P.C., G.C.S.I., G.B.E., British statesman; born Jan. 7, 1867; died Sept. 28, 1937. He was educated at Harrow and Balliol College, Oxford, and was called to the Bar at the Middle Temple in 1893. In parliament, as a Unionist, he represented South Manchester, 1900–06, and Taunton, 1909–12. In 1912 he succeeded his father as 2nd Viscount Peel. He was Chancellor of the Duchy of Lancaster and Minister of Transport, 1921–22; Secretary of State for India, 1922–24 and 1928–29; First Commissioner of Works, 1924–28; and Lord Privy Seal, 1931. He was a member, 1930–31, of the Indian Round Table Conference; chairman, 1931–32, of the Burma Round Table Conference; and member of the Indian Joint Committee, 1933. His most recent task, and one of his most onerous, was performed as chairman of the Palestine Royal Commission, 1936–37. Lord Peel was created an earl in 1929, in which year he was also created Viscount Clanfield of Clanfield. He was appointed to the Privy Council in 1920, and was created G.B.E. in 1919 and G.C.S.I. in 1932. In 1899 he married the Hon. Ella Williamson, and had a son, who succeeds him as 2nd earl, and a daughter.

PEIPING or PEKING, the capital of the Chinese Empire from about 1267 to 1368 and again from 1421 until the fall of the Manchu dynasty in 1911, and of the Chinese Republic from 1911 until 1928. It was captured in 1928 by the armies of the Chinese Nationalist government, which had established its capital in Nanking, and was renamed Peiping (Northern Peace), the name which it bore under the early Ming emperors. It was occupied by the Japanese in



Keystone]

THE COPPER PAVILION IN THE FAMOUS SUMMER PALACE OUTSIDE PEIPING. ENTIRELY BUILT OF COPPER, IT IS AN EXQUISITE EXAMPLE OF CRAFTSMANSHIP

the summer of 1937 (*see* SINO-JAPANESE WAR) and the Peace Maintenance Commission which was set up restored the old name of the city, Peking, in the autumn. Peiping, or Peking, became the seat of a régime which was set up under Wang Ko-min and Tang Er-ho with Japanese sympathy and support and claimed to exercise authority over North China under the name of the Provisional government of China. Population (1936) 1,560,000. Of all the Chinese larger cities (Shanghai, Tientsin, Canton, Hankow), Peking is the least developed industrially, being without large factories ; but it is a notable centre of the Chinese arts and handicrafts, and until 1937 occupied a very important place in Chinese intellectual life. There were more than 50,000 students of all grades in Peiping before the outbreak of Sino-Japanese hostilities in the summer of 1937 caused a serious setback to intellectual life. All the Chinese universities in the city were closed, the premises in some cases being occupied by Japanese troops ; and only Yenching university (founded and supported by American missionary contributions), and two other institutions of higher learning in which there was a foreign interest, found it possible to carry on work during the first months of the Japanese occupation. It is still too early to predict whether this blow to Peiping's significance as an intellectual centre will be permanent. Many professors and scholars with nationalist views have found it expedient to leave the city. Peiping is the seat of the most elaborate and impressive medical undertaking in the Far East, the hospital and medical school equipped by the Rockefeller Foundation. A small part of the city is walled off as the legation quarter, where foreign embassies and legations are located, and where the signatory Powers of the Boxer Protocol possess the treaty right to maintain troops. (W. H. CH.)

PELLAGRA : *see* DIETETICS ; TROPICAL DISEASES.

PEMBA : *see* ZANZIBAR.

PENAL SYSTEM. In Great Britain, the year 1937 was one of considerable activity in regard to penal reform. Sir Samuel Hoare, Home Secretary, after consultation with the Prison Commissioners, announced in June that he intended to introduce a Prison Reform Bill. In order to obtain the fullest information on the subject, he visited personally the prisons at Pentonville, Holloway, Wandsworth, Wormwood Scrubs, Norwich, and Dartmoor. Mr. Geoffrey Lloyd, parliamentary under-secretary, visited Maidstone and Chelmsford.

In the new bill (introduced in Feb. 1938, and based largely on the report of the Departmental Committee on persistent offenders appointed by Mr. J. R. Clynes in 1931) the term ' penal servitude ' was abolished and replaced by ' detention ' and ' prolonged detention '. It proposed to establish two new types of prisons—the one for offenders expected to benefit from a progressive system of training, on Borstal lines, to fit them for normal lives ; and the other principally for older and longer-sentenced men, who would be unlikely to benefit from special training. Under its terms the Home Secretary would be empowered to release on licence any offender who, having completed one-third of his sentence, had benefited from his training ; and short sentences, particularly on adolescents, who thereby may be embarked on criminal careers, would be virtually abolished.

Great strides were made during the year in ameliorating the life of the convict. Following on the successful experiments at Wakefield and Maidstone, it was decided to institute a system of wages, varying from 3*d.* to 1*s.* 7*d.* per week, for long-term convicts at Dartmoor, Parkhurst, and Chelmsford, the chief feature of the innovation being that it is to operate from the beginning of the sentence. It was found that men responded better to receiving privileges from the start instead of waiting for ' special stage ', also that the fear of their suspension or cancellation was an inducement to good behaviour.

Other innovations were : the installation of sound-film equipment in the more important prisons for the exhibition of educational and travel pictures, with entertainment films on special occasions ; and the general relaxation of smoking regulations. Convicts may now smoke, not only in their cells, but also when doing normal work, whereas formerly only a few were allowed to do so, and then only at set times and places. The system of treating offenders as ' clinical cases ' was developed during 1937, notably at Wakefield and Wormwood Scrubs, each convict having a medical chart.

Wakefield has been the scene of further experiments, notably in regard to the minimum of supervision. Most remarkable of all is the ' labour camp ', where prisoners fell trees and clear the ground, living in huts uncircumscribed by wall or fence. So far the experiment has been a complete success. At Chelmsford, where young criminals with bad records are detained, there has been a general extension of facilities for sport, model-making, and evening classes. Improvements and additional liberty were also provided at Portsmouth, now a half-way house for convicts nearing the end of long sentences. The conditions are framed to accustom them to ordinary factory and industrial life, in an effort to keep them from returning to prison. A separate hall for older men was provided at Parkhurst, and gymnasium classes were instituted for men up to 26 at Wandsworth ; and at Peterhead, Scotland, where the convicts for some time have been allowed to play cards, organized whist-drives are arranged for them during the winter months.

On the administrative side, work proceeded with the construction of the new £14,000 Imperial Training College for prison officers at Wakefield. The Home Secretary also introduced a training course for probation officers, with the aim of making the fullest use of the existing powers for the probation of young first offenders.

Penal reform, long overdue, received in 1937 the attention it deserves. Sir Samuel Hoare defined his object as 'an orderly plan of progress on a wide front in the next two or three years'. He said that the idea that a prison was of merely punitive character was out-of-date, and that its influence should be reformative rather than deterrent; the ideal reform was to keep people out of prison and to appeal to their better instincts, so as to encourage them to become useful and respectable citizens. (X.)

United States.—Guards in Federal prisons no longer carry clubs; although in some State institutions officers working within the walls are allowed that weapon and the black jack.

The governor of the State of Georgia has announced that the penal system of that State will be reorganized thoroughly, and that the reorganization presages the doom of the notorious chain gangs. The programme hinges around a newly completed, ultra-modern prison in Tattnall county of that State.

Many changes were introduced into the New York prison system through the findings of the State Commission for the study of the educational problems of penal institutions for youth. The plan is simple, and is based upon the assumption that the proper type of education can reduce the tendency to recidivism in released prisoners. Curricula were developed for the different types of State institutions. Experiments in the use of this material were carried on in Clinton prison, Wallkill prison, and in the Elmira reformatory, all in New York State. The old formal method of teaching was discarded, and the instruction was made as individual as possible through the adoption of the project method of teaching used in modern schools. This means giving the student a graded series of tasks and promoting him as rapidly as he finishes each one. In this way the individual student is unretarded by laggards. Under the new plan, practically every official who comes into contact with the prisoner must be somewhat of an educator. This has led to one of the most progressive innovations of all—the employment of guards with educational backgrounds, or who are especially trained to assist in the educational work. In June, 300 guards completed a 10-week training course at Wallkill. They are looked upon as the foundation of the new method in all the prisons of the State.

In New York State also, the city of Rochester was authorized by the legislature to impose week-end sentences upon a defendant until he completes the term set by the court. This enables a prisoner to serve his sentence without possible loss of employment. (L. E. L.)

PENANG: *see* STRAITS SETTLEMENTS.

PENNSYLVANIA: *see* UNITED STATES OF AMERICA.

PEPPER: *see* SPICES.

PERFUMERY: *see* SOAP, PERFUMERY, AND COSMETICS.

PERIM: *see* ADEN.

PERIODICALS: *see* MAGAZINES AND PERIODICALS.

PERMANENT COURT OF INTERNATIONAL JUSTICE, THE. In May 1937, M. Charles de Visscher (Belgium) was elected to the seat vacated by the death of Baron Rolin-Jaequemyns (Belgium), but the vacancy left by the death of M. A. Hammarskjöld (Sweden) in July was not filled. At the end of the year the Court was composed as follows: M. Guerrero (Salvador), *President*; Sir Cecil Hurst (United Kingdom), *Vice-President*; Count Rostworowski (Poland), M. Fromageot (France), M. de Bustamente (Cuba), M. Altamira (Spain), M. Anzilotti (Italy), M. Urrutia (Colombia), M. Negulesco (Rumania), Jonkheer van Eysinga (Netherlands), M. Nagoaka (Japan), M. Cheng Tien-hsi (China), Mr. Manley O. Hudson (U.S.A.), M. de Visscher (Belgium).

On April 26, Monaco, by signing the Optional Clause, brought up to 41 the number of States bound by it.

Three judgments were handed down by the Court during the year:

(i) *Case between Belgium and the Netherlands regarding the diversion of waters from the River Meuse.*—On Aug. 1, 1936, the Netherlands instituted proceedings against Belgium under the optional clause on the ground that certain works by Belgium in connexion with the construction of the Albert Canal (Liége to Antwerp) and the manner of supplying with water certain canals in the north of the country were inconsistent with the Treaty of May 12, 1863, concerning the régime for taking water from the River Meuse. The Belgian government, in a counter-claim, held that the Netherlands, by constructing the Borgharen barrage and the Juliana Canal (Maestricht to Maasbracht), had committed a breach of the same treaty. On June 28, 1937, by ten votes to three, the Court rejected both the submissions of the Netherlands and the Belgian government's counter-claim.

(ii) *Case between France and Greece concerning lighthouses in Crete and Samos.*—On March 17, 1934, the Court handed down a judgment, whereby it decided the principle that the contract of April 1913 between a French firm and the Ottoman government, extending from Sept. 1924 to Sept. 1949 concession contracts granted to the said firm, was duly entered into and was operative as regards the Greek government 'in so far as concerns lighthouses situated in the territories assigned to it after the Balkan wars or subsequently'. The Court, however, added the reservation that it was 'not called upon to specify which are the territories . . . where lighthouses in regard to which the contract of 1913 is operative are situated'. After discussions, the Greek and French governments, on Aug. 28, 1936, signed a special agreement asking the Court for judgment regarding the applicability of the principle laid down in March 1934 to lighthouses in Samos and Crete. Judgment was rendered by the Court on Oct. 8, 1937, whereby it was decided by ten votes to three that the lighthouses in Samos and Crete were covered by the contract of 1913.

(iii) *Case between Belgian and Spanish governments as to whether the responsibility of the Spanish government was involved in regard to the death of Baron Jacques de Borchgrave.*—The case was submitted by a Special Agreement of Feb. 20, 1937, between the two governments. On Nov. 6, 1937, the Court rendered judgment overruling unanimously the preliminary objections of the Spanish government and fixing the time-limits for the continuation of the written proceedings on the merits.

At the end of the year two cases were pending before the Court: the *Moroccan Phosphates Case* between France and Italy, submitted by Italy in March 1936, and the *Panevezys-Saldutiskis Railway Case* between Estonia and Lithuania, submitted by Estonia in Nov. 1937.

BIBLIOGRAPHY.—*See* Report of the Secretary-General of the League of Nations; also Publications of the Court. (S. A. HE.)

PERU, a republic on the west coast of South America; language, Spanish; capital, Lima; president, Gen. Oscar

R. Benavides. The area is 532,185sq.m., including approximately 100,000sq.m. in dispute with Ecuador. In July 1937, the first official census since 1876 was begun. Population (est. 1935), 6,791,914. The principal cities, with estimated populations, are: Lima (281,000), Callao (75,000), Arequipa (70,000), Cuzco (40,000).

History.—Government is by decree in the absence of regular congressional sessions and is controlled by the president-dictator, General Benavides. In 1937, Peru continued the steady economic improvement manifested since 1932, a condition due largely to the increased production of gold and cotton. The chief disturbing factors were the continued agitation by members of the proscribed Apra party, which resulted in disorders and arrests, and the uncertainties attending the efforts to settle the boundary dispute with Ecuador. Negotiations for amicable adjustment of the controversy were started in Washington in Sept. 1936, with an agreement to accept United States arbitration in the event of failure. Friction along the frontier was acute in June, with the dictators of the disputant countries unwilling to make concessions lest they be capitalized upon by opposing factions. The crisis passed, but the year closed with no definite progress in the negotiations.

Education.—In 1936, there were 3,802 elementary and 45 secondary schools, with a total enrolment of approximately 525,000. The budget allotted 10 per cent. to education. Higher education is provided by technical schools and by the university of San Marcos (Lima), the oldest in America.

Trade and Communications.—Regular shipping service and five different airlines provide Peru with adequate external communication. There are over 2,600m. of railways (about 70 per cent. government-owned), and approximately 13,000m. of roads, mostly improved. About 13 per cent. (£1 million) of the national expenditure went to roads in 1936. Peruvian foreign trade regularly shows a favourable trade balance, offset, however, by the extensive foreign investment in the country. Imports (principally foodstuffs and manufactured articles) totalled 193,500,000 soles in 1936, with the United States the leading source (33 per cent.), followed by Germany and Great Britain. Exports (largely petroleum products, sugar, and minerals) totalled 335,800,000 soles, with 22 per cent. to Great Britain, 21 per cent. to the United States, and 11 per cent. to Germany. The value of imports from and exports to the United States increased 24 per cent. and 67 per cent. respectively in the first nine months of 1937, representing a substantial increase in the United States' share of the foreign trade.

Agriculture and Mining.—Peruvian industry, with the exception of sugar, is primarily in foreign hands; foreign investment is estimated at over £80 millions, of which nearly half is United States capital, over one-third British, and much of the balance German and Japanese. United States interests own the valuable mines and smelters, and British control 80 per cent. of the oil, while Japanese are prominent in the rapidly expanding cotton production. In addition, 24 per cent. of the sugar output is United States owned. Agricultural production, estimated at £20 millions annually, accounts for half the national income, with cotton, sugar, rice, and wheat the leading items. Petroleum output in 1936 was valued at 133 million soles, with silver (36 million soles), copper (27 million soles), and gold (21 million soles). Vanadium and tungsten are also important.

Finances.—The monetary unit is the sol (value: about one shilling). The national budget in 1936 was £6,895,724.
(L. W. Be.)

PESCADORES: *see* Japan.

PETROL. Over 97 per cent. of the petrol used in the United Kingdom in 1937 was consumed by the motor industry, and, of the total, 91·3 per cent. was imported refined spirit, on which there was a duty of 8*d.* per gallon, and the remainder was produced at home by the refining of imported crude petroleum and from the treatment of coal and Scottish shale. The latest available statistics show that while petrol imports increased by only a little over 1 per cent. in 1936, they rose by 8 per cent. in 1937, while home production, encouraged by a preference of 8*d.* per gallon, is increasing more rapidly. In the year 1935, in which there was abnormal development in the 'oil from coal' industry, it stood as high as 35 per cent., and although it fell in 1936—a more normal year—to 17 per cent., the figure for 1937 is well over 20 per cent. The 3 per cent. of light spirit not absorbed in the motor industry is used in the heavy chemical, dry cleaning, solvents and dyestuffs trades.

Present-day motor fuels have benefited from the persistent research of petroleum technologists, mainly in the direction of anti-knock qualities, while home-produced spirit has been greatly improved by the development of new processes, the most notable of which is the hydrogenation plant of Imperial Chemical Industries, Ltd., at Billingham-on-Tees, now producing nearly one-third of the total home output, which is marketed by the principal petrol distributors. Of the 105 million gallons produced from indigenous materials in the United Kingdom, 50 millions are from the gasworks and coke ovens, 33 millions from Billingham, and several million gallons from low-temperature carbonization and other 'oil from coal' plants which aim at making the country less dependent on imported petrol.

In 1937 the United Kingdom imported 1,356,185,000 gallons of motor spirit, valued at £25,586,210, showing increases of 6·9 per cent. in quantity and 28 per cent. in value over 1936. With 169,000 more vehicles in use, mainly private cars, the average monthly petrol consumption was 122,468,000 gallons, against 113,627,500 gallons per month in 1936.

The price of first-grade spirit was 1*s.* 6*d.* per gallon (including the 8*d.* tax) at the beginning of the year and 1*s.* 7*d.* in December, having touched 1*s.* 7½*d.* during the second quarter; but the price fluctuation had no appreciable effect on demand, the monthly figures pursuing the normal seasonal curves, the holiday months being the heaviest.
(A. C. Cr.)

In the United States, owing to the increase in the number of motor-cars and the improvements in roads, the petrol or gasolene consumption for 1937 was higher than ever before. The revival from the depression in this first part of the year put the United States emphatically on wheel again. To meet the demand of the almost 40 million motor vehicles being operated, about 527 million barrels of gasolene were necessary and the increased consumption over 1936 (a record year) was about 10 per cent. Moreover, the country's local and State roads now total over 3 million miles, which have largely been financed by State gasolene taxes levied on the motorist.

An important factor contributing to the growth of automobile use and of gasolene demand, has been the ability of the American petroleum industry to keep gasolene prices at low levels. According to statistics issued by the American Petroleum Institute, the average total retail price, less tax, in 50 representative cities was 29·74 cents. per gal. in 1920, when 9 million cars were on the roads, and in 1936 when 28 million motor vehicles were operating it was 14·10 cents. per gal.

Expanding airline mileage in the United States has added a substantial figure to gasolene demand. While this is but a low percentage of total demand, its importance lies in the technical development of suitable aviation fuels, which, in turn, bears direct relationship to the technical development of motor fuels. Motor fuel was first produced at refineries by straight distillation, and later by cracking. The quantity of gas produced in the cracking process increases with the improvement of the anti-knock quality of the motor-fuel product. A satisfactory economic disposal of this gas was a real problem for refineries; but it was solved by the polymerization process. The cracking process depends for its economic utility on the conversion of heavier hydrocarbons to lighter ones of greater value, while the polymerization process is in principle the reverse, *viz.*the conversion of gaseous hydrocarbons to liquid ones in the form of high anti-knock motor fuel. In other words, the objective was attained, and, in addition, it was found that a super-type of motor fuel could be produced.

How this development affects automobile and aviation development can be readily illustrated. The demands of the automobile and aircraft industries for high-octane (anti-knock) fuel have increased from year to year. Since 1925, the maximum automobile speed has gone up from 60 to more than 100m.p.h., and the cruising speed of aeroplanes from 80 to 220m.p.h. Such increases would have been impossible without high-octane motor fuels. The requirements of automobiles may generally be satisfied by fuels of a value less than 75 octane. For aeroplanes, however, fuels of 95 and 100 octane are desirable, and for military purposes are necessary. Through the polymerization process such aviation fuel can be made. The refining capacity of the United States will yield, it is estimated, an annual output of over 9,000 million gals. from hydrocarbon gases. (L. M. F.)

PETROLEUM. World production of petroleum (crude oil) during 1937 undoubtedly reached a new height, mainly because of a substantial increase in United States output. Soviet Russia, Venezuela, Iran (Persia), and Bahrein Islands (Persian Gulf) are among the other countries which will show greater output when final figures become available. The latest available figures (1936) follow:

WORLD PRODUCTION OF PETROLEUM BY COUNTRIES, 1936 AND TOTAL, 1857–1936

Authority: United States Bureau of Mines, which indicates that all figures are subject to revision.

	1936[1]		1857–1936[2]	
	Thousands of barrels of 42 gallons	Per cent. of total by volume	Thousands of barrels of 42 gallons	Per cent. of total by volume
1. UNITED STATES	1,098,516	61·36	18,693,556	64·16
2. U.S.S.R. (Russia)[3] .	189,941	10·61	3,575,081	12·27
3. VENEZUELA .	155,229	8·67	1,308,569	4·49
4. RUMANIA .	63,750	3·56	727,290	2·50
5. IRAN (Persia) .	61,728	3·45	714,651	2·45
6. NETHERLANDS INDIES .	49,360	2·76	737,942	2·53
7. MEXICO . .	41,028	2·29	1,818,703	6·24
8. IRAQ . .	29,406	1·64	69,817	·24
9. COLOMBIA .	18,756	1·05	185,857	·64
10. PERU . .	17,595	·98	205,097	·70
11. ARGENTINA .	15,455	·86	152,984	·53
12. TRINIDAD .	13,237	·74	129,054	·44
13. INDIA . .	9,619	·54	263,853	·91
14. SARAWAK AND BRUNEI .	4,720	·26	73,456	·25
15. BAHREIN ISLANDS(Persian Gulf) . .	4,645	·26	6,227	·02
16. POLAND . .	3,777	·21	247,515	·85
17. GERMANY .	3,087	·17	34,274	·12
18. JAPAN (including Taiwan)	2,445	·14	72,564	·25
19. SAKHALIN .	2,218	·13	20,201	·07
20. ECUADOR .	1,951	·11	15,772	·05
21. CANADA . .	1,498	·08	38,091	·13
22. EGYPT . .	1,223	·07	30,805	·11
23. FRANCE . .	535	·03	9,190	·03
OTHER COUNTRIES . .	552	·03	6,686	·02
Total .	1,790,271	100·00	29,137,235	100·00

[1] The above figures include all revisions up to Nov. 1937.

[2] For detailed statement *see* figures published by the U.S. Bureau of Mines.

[3] Exclusive of Sakhalin, which is shown separately.

In all countries largely dependent on outside sources for oil, such as Great Britain, France, Germany, Italy, and Japan, every effort has been made to stimulate home production. Increasing use of the motor-car in these countries

A PANORAMA OF THE IRAQ PETROLEUM COMPANY'S KIRKUK OILFIELDS WITH THE FIRST PUMPING STATION IN THE FOREGROUND has largely resulted in increased imports. Great Britain is consuming 78,900,000 barrels of petroleum products compared with 59 million barrels in 1932; France 42 million barrels against 33,500,000 barrels; Germany 37 million barrels against 21 million barrels; Italy 19,900,000 barrels against 10,370,000 barrels; Japan 28 million barrels against less than 14 million barrels in 1932.

Great Britain and France, with American interests, have successfully developed Iraq production in the Kirkuk field, which is taken by pipe-line to the Mediterranean through the Franco-Syrian town of Tripoli and branches at Haditha to the port of Haifa, under British mandate. British petroleum policy has had further success in Arabia, in Hejaz, and in Yemen. Production by American interests in Bahrein Islands (under British protectorate) has increased. Japan has managed to boost Formosa production, as well as output from North Sakhalin, leased from Soviet Russia.

Following decline of the Grozni field and the old oil-fields of Baku, Russia has succeeded in making large extensions of producing territory in Grozni, Baku, and Maikop, largely through replacement of old freefall and cable drilling methods by American rotary drilling methods and by means of deeper drilling. Utchkezel and Handay, in Middle Asia, is yielding increasing oil. New oil zones are promised in the Turkmen Republic, while Crimean oil properties show promise.

The estimated crude oil production in the United States for 1937 is 1,275 million barrels against 1,098,516,000 barrels in 1936, a new high record reflecting increased demand for petroleum products, particularly for petrol (*q.v.*), as the recovery from the depression gained impetus through the early months of the year. While production of oil in the United States is restricted by State conservation laws, supported by the Interstate Oil Compact and the Federal Connally Act forbidding inter-State transportation of 'hot oil'—petroleum produced in violation of State production quotas—the year saw one of the most active drilling campaigns in the history of the industry. In Texas, Oklahoma, and Kansas, and beyond the Rockies in California, geologists carried on unusual searches for favourable prospects. It appears that the 26,000 new wells of 1936 will be exceeded by 6,000, and will closely approach the all time record activity established in 1920.

Despite the heavy drain on American oil-fields, which have produced 20,000 million barrels of oil since 1857, 64 per cent. of total world production, the United States continues to be in a satisfactory situation as to petroleum reserves. Such fields as East Texas, Yates, Winkler, Conroe and Van in Texas, the Seminole, Oklahoma city and Fitts areas in Oklahoma, Kettleman hills in California, and the fields of Michigan and Central Illinois have kept the reserve figure from diminishing. Total reserves as on Jan. 1, 1937, were estimated by the American Petroleum Institute Committee on reserves at 13,063 million barrels.

Owing to restriction of individual well production and more efficient utilization of natural reservoir energy such as gas and water to promote greater ultimate recovery, the actual average per well production has increased from 2,420 barrels per annum in 1926 to 3,110 barrels per annum in 1936. Experts say that ample reserves remain in sight at familiar depths of 3,000 to 5,000ft. to take care of the world's needs for some years to come, but that has not stopped deep well exploration. With an eye to the distant future, the American industry has been going ahead, probing deeper and deeper, studying formations, perfecting deep drilling technique, and sometimes finding oil. The search for petroleum two miles down and more has been carried forward in widely scattered areas. Texas boasts the deepest well in the world—12,786ft. Louisiana has the deepest producer in the Lirette field, completed in 1936 at a depth of 11,619ft. California has a number of deep wells, including one in the Kettleman hills field producing at 10,735ft. which was completed in 1937. Mexico drilled a test well of 10,000ft., Rumania one of 11,000ft., and Iran has one deeper than 10,000ft.

Probably the most important development in the American industry is the achievement of greater stability. Until recent years, efforts to approximate an equality between supply and demand were more or less unsatisfactory; it was feast or famine. Within the last few years, the United States Bureau of Mines with increasing accuracy has predicted the future demand for petroleum and its products, and recommended production quotas to the regulatory bodies of the several producing States. These quotas are put into effect. The policy has practically halted periodic over-supply, which formerly resulted in excess storage above ground and its attendant waste.

With the growth of conservation principles, there have come increasing limitations upon, and exceptions to, the rule of oil capture. To-day, an owner or lessee cannot drill without the permit of a regulatory body; locate a well except as the applicable spacing rule or exception specifies; penetrate surface water sands without adequate subsequent protective casing; complete a well without a proper casing programme and suitable means for shutting off extraneous water; produce a well except through tubing with restricted flow; utilize gas in reservoir as a lifting agency beyond a permitted gas-oil ratio; currently produce in excess of established allowable production; create fire hazards or waste oil by use of earthen storage; transport oil by pipe-line without a pipe-line permit; dispose of salt water without prevention of pollution; nor abandon a well without proper plugging. In these and many other ways he must subordinate his hitherto unrestricted right of capture to the public policy of the State.

There has been a distinct trend towards wider and more uniform well spacing. Increasing improvement in petroleum technology and associated sciences having to do with reservoir energy and efficient uses of natural gas in producing oil has kept pace with equipment and drilling methods permitting much deeper exploration. By the employment of geophysical methods, such as the torsion balance, seismograph, magnetometer, and gravimeter, oil exploration has widened, lengthened, and deepened. Largely due to their use in the last 15 years, the deep well's stature has changed from 5,000 to 12,000ft., and the subsurface horizons of the future are no longer delimited. At the present time it is estimated that about 75 per cent. of the new major pools are being discovered by geophysical methods.

Further significant advances have been made in refining processes, particularly polymerization. This process is the most important since the cracking process, of which it is the product. Without benefit of cracking, the petrol demand since 1920 could not have been satisfied without a 60 per cent. increase in the total of the crude oil that has actually been produced. Polymerization processes have been producing large quantities of petrol from refinery gas and natural gas. Hydrogenation is another process past the experimental stage and in reserve for the future. It provides for making petrol from the heaviest residues. In earlier days the refiner's cuts of crude oil designed to satisfy demand for one product resulted in overproduction of others. Now the refiner is more nearly approaching the flexible position of making the products desired in the proportions desired.

The year 1937 has been noteworthy for the ' coming of age ' of the petroleum chemical industry. Recent researches have resulted in determining the identity and approximate amount of the significant hydrocarbons actually in petroleum, in the development of processes of fractionation which can be used economically on a commercial scale to effect the separation of wanted hydrocarbons, and in the accumulation of information on the chemical, thermodynamic, and kinetic constants of hydrocarbons and their derivatives. The petroleum chemical industry is now successfully making a host of chemical products. The wresting from nature of knowledge of the chemical constitution of petroleum is one of the most important developments in the history of the industry. (L. M. F.)

Natural Gas.—Production of natural gas in the United States suffered only a comparatively small reduction during the depression years, dropping from 1,943,000 million cu. ft. in 1930 to 1,556 billion in 1933, and recovering to approximately the former level in 1935 ; in 1936, production reached 2,175 billion cu. ft., of which 30 per cent. was used in the field, 49 per cent. for industrial, and 21 per cent. for domestic consumption. The largest item of industrial use is the production of carbon black, which took 13 per cent. of the total output.

The fact that much of the gas is produced from oil wells in remote regions where the consumption demand is small has led to much wastage ; some 25 years ago it was estimated that the wastage was about equal to the consumed output, but since then this proportion has been much reduced, chiefly through more economical methods of handling, pumping the excess back into the ground for storage or repressuring the well, and, most of all, by the construction of distribution lines to carry the gas to consumption centres far removed from the point of production. About one-quarter of the present consumption is now carried through long-distance pipe-lines ; some of the more striking ones are a line from the Texas panhandle to Detroit, Mich., and intermediate points, and one from Kentucky to Washington, D.C. (G. A. Ro.)

PETROLOGY : *see* GEOLOGY.

PHILADELPHIA, third largest city of the United States, conducted in 1937 a celebration of the 150th anniversary of the signing of the Constitution of the United States, which was continued over a period of 112 days (May 10 to Sept. 17). Several dramatic strikes ; the Grand Jury investigation of gambling and police ; a vain attempt to reorganize the transit company ; and the also unsuccessful effort of the mayor, S. Davis Wilson, to obtain city administration of the municipal gas works, which for 30 years have been leased to the United Gas Improvement Company, were outstanding features of the year. In January, a joint legislative committee which began investigation of the city-county government of the city reported in favour of the abolition of the municipal court and other changes, and was authorized to continue until the next session of the Assembly. The Works School Survey, in a September report, recommended drastic changes in the school system in Philadelphia, including the abandonment of the normal school. In October, the mayor and Mrs. Wilson began a taxpayers' suit against the Board of Education to test that body's constitutional right to the power of taxation. The court ordered that the board should not impose a greater tax than 85 cents on each $100 assessed value ; the board took an appeal.

On May 6, 5,000 union hosiery workers took possession of the Apex hosiery plant, and on June 23, the mayor led 256 of them out of the building. The strike ended a month later. There were also two city-wide strikes of truck drivers, the first of which, on July 2, paralysed the city.

PHILATELY. A conservative survey of the year 1937 does not disclose any great changes in the philatelic pattern of the world. The hobby continues to interest an ever-increasing number of collectors with the greatest activity being noted in England, on the Continent and in the United States. Much enthusiasm has been noted in South Africa, Australia, and New Zealand, where important exhibitions have been held. Several prominent collections have been disposed of by auction both in England and the United States, where the items offered found a ready market at surprisingly high prices. Outstanding rarities have continued to increase in value whenever offered for sale. A definite trend towards collecting foreign stamps has developed in the United States, and throughout the world generally collecting along serious lines as opposed to merely filling spaces in printed albums is finding favour. The total number of stamps listed in the major catalogues for 1937 approximates 2,000—slightly more than for the previous year.

Three major stamp issuing events are noted for the year, the first of which occurred in May, when Great Britain issued throughout the Empire stamps to commemorate the coronation of King George VI and Queen Elizabeth. This series, which totalled 202 stamps (three each for the 45 Colonies and 67 for Great Britain and the Dominions), had long been awaited by philatelists, and the advance orders reached tremendous proportions as speculators sought to repeat the profits made on the Silver Jubilee series of 1935.

The second is a direct outgrowth of the war in Spain, which had resulted in the philatelic world being flooded with a deluge of stamps purported to have been issued by the governments of both warring factions. The authenticity of many of these stamps was questioned by philatelists, it being generally conceded that at least some of them were not authorized. The number of stamps issued assumed such alarming proportions—there being more than 1,000 reported—that editors of the great catalogues of the world abstained from listing the stamps until such time as authoritative information can be gathered.

The third, and in many ways the most interesting event, has been the promotion of miniature or ' souvenir ' sheet collecting. This type of commemorative stamp consists of a block of four or a pair, or even a single stamp printed in the centre of a small-sized sheet of paper bearing appropriate inscription of the event commemorated. Sometimes the stamps are of special designs, more often they are in the same design as a regularly issued stamp, printed in a different or even in the normal colour. In 1926, and on various other occasions, the United States prepared ' miniature ' sheets in compliment to philatelic exhibitions. The idea had long been used by various philatelic exhibitions in Europe as a means of obtaining revenue to promote the exhibitions. Usually the sheets were obtainable only at the exhibitions themselves, and their sale was limited to one set with each admission ticket. Seized upon during the last year and exploited by operators of philatelic exhibitions, and more recently by governments themselves as a means of obtaining additional revenues, souvenir sheets achieved an enormous popularity. The exploiters behind the newer issues, however, seem to have overstepped themselves by charging excessive premiums over the face values of the stamps, and in doing so have incurred the wrath of the philatelic press. In fact, the leading catalogue of Great Britain (Gibbon's) has refused to list, with few exceptions, more of these issues; and the Scott catalogue in the U.S.A. has limited their listing to notations under a special department known as 'Tentative Listings'.

PHILIPPINES, COMMONWEALTH OF THE. The Philippine Islands lie south-east of China, entirely in the tropics; capital, Manila; United States high commissioner, Paul V. McNutt; president, Manuel Quezon; vice-president, Sergio Osmeña. Its status, under the constitution provided in the Tydings-McDuffie Independence Act, is that of a 'commonwealth' pending the achievement of independence not later than July 4, 1946; national assembly, unicameral. During the period of the commonwealth, all legislation affecting currency, coinage, imports, exports, and immigration requires approval of the president of the United States; the United States is in control of foreign affairs; and all decisions of local courts are subject to review by the United States Supreme Court. Area, approximately, 114,400sq.m., population (est.) over 14 million (13,099,405 by 1935 est.); basic stock, Malayan, but many blends and mixtures exist. Chinese number about 75,000, and Japanese about 20,000.

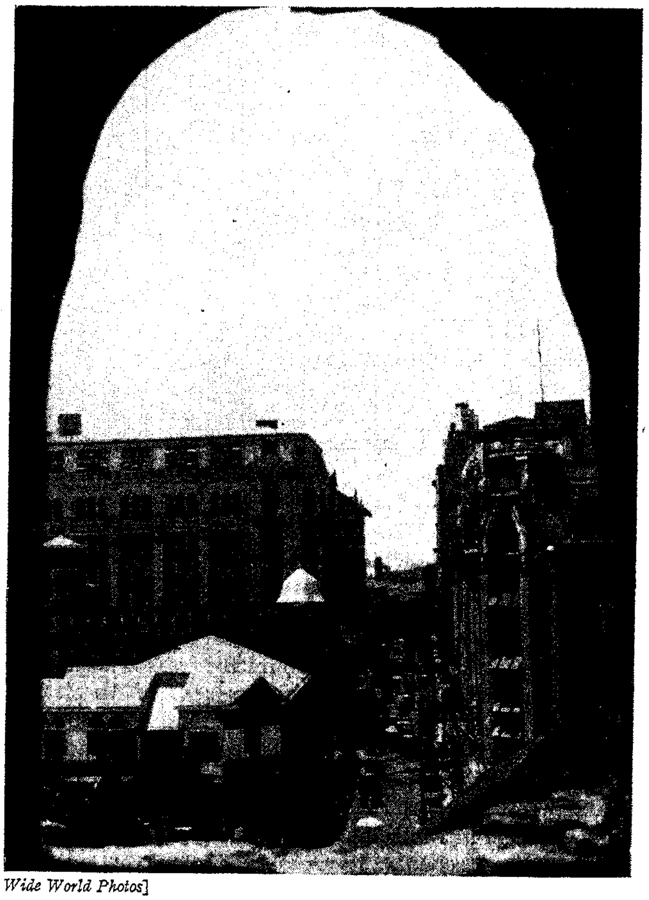
Religion and Education.—The Filipinos proper are mostly Roman Catholics. The Moros (over 400,000) are Mohammedans; and the so-called wild peoples (over 500,000, including the Negritos) are pagans. In June 1937, school enrolment was 1,250,000, with about 2 million children of school age (or 60 per cent.) not in school. The majority of those in school do not reach beyond the fourth year. Teachers number over 28,800. Children in private schools number about 100,000, and enrolment in the University of the Philippines is in excess of 6,000. High school, college, and university education is given in various institutions, both church and secular. About 27 per cent. of the government revenues is spent on education.

History.—The constitution of the commonwealth was adopted Feb. 2, 1935; the first election was held Sept. 17. The plebiscite on woman suffrage, required by the constitution, held on April 30, 1937, resulted in an affirmative vote of 447,681 as against a negative vote of 44,307—all women. A joint committee of Americans and Filipinos met in Washington and later in Manila to discuss trade and economic conditions and to hold hearings relative to President Quezon's request to have the independence date brought forward to July 4, 1939, and regarding the adjustments that might be necessary should Congress agree to this. The opening of the regular session of the assembly was changed from June 15 to Oct. 15. On Feb. 3–7, the 33rd Eucharistic Congress was held in Manila. The year was marked by disastrous fires, typhoons, and floods in various parts with considerable loss of life and damage to property; and an earthquake in August damaged one of the large office buildings in Manila, where office space was already at a premium. The Sakdalistas, who demand immediate independence and are said to be communistic, were a cause for alarm on several occasions, and several outbreaks occurred among the Moros. The controversy as to precedence between the high commissioner and the president was settled in favour of the former. The assembly met on Aug. 30 to consider emergency school legislation and arrange for elections in 1938.

Trade and Communications.—The value of domestic trade (gross sale of merchants, manufacturers, and peddlers) for 1936 and the first four months of 1937 was 825,680,000 pesos and 290,213,000 pesos respectively. The value of exports and imports for the first nine months of 1937 was 245,695,000 and 157,891,000 pesos respectively, these figures representing increases of about 5 and 13 per cent. over the first nine months of 1936. Chief exports for the first nine months of 1937, in millions of pesos, were: sugar, 102,655; abaca (Manila hemp), 35,646; coconut oil, 31,129; lumber and timber, 6,524; and iron ore, 2,122.

Chief classes of imports, in millions of pesos, were: cotton goods, 25,922; iron and steel, 16,443; and machinery, 10,193. The United States took by far the greatest proportion of exports, and was the major importer, with Japan second in both.

During 1936, monthly carloading averaged 105,598 tons, and for the first four months of 1937, 240,905 tons. Steamship averages for the same periods were respectively 347,578 and 305,193 tons. On Jan. 1, 1937, there were 28,420 automobiles and 17,355 motor trucks. On the same date, roads of the first, second, and third class were approximately 9,556, 5,165, and 2,088kms., respectively. Approximately 159,581,000 pesos are invested in land transport and 8,755,700 pesos in telephones. Radio control is vested in a radio board created by an act of Oct. 22, 1936. Air service is provided by the Pan-American Airways, the Philippine Aerial Taxi Co., and the Iloilo-Negros Air Express Co. The first-named company inaugurated commercial air service between Manila and Hong Kong, April 28, 1937. The government released 500,000 pesos towards the construction of an aeroplane basin and national airport in Manila Harbour; and a Bureau of Aeronautics was established Nov. 12, 1936.



Wide World Photos]

PHILIPPINE ISLANDS: A VIEW TAKEN FROM THE TOWER OF THE SANTA CRUZ CHURCH AT THE ESCOLTA, PRINCIPAL SHOPPING STREET OF MANILA

Natural Resources.—Forest and agricultural products, minerals (especially gold), and fisheries are among the principal natural resources. On Jan. 1, 1937, the capital invested in the lumber industry was approximately 29,387,000 pesos, and the production of 1936 approximately 1,928,000cu.m. (about 811,303,000 board ft. being cut from public forests). Principal agricultural crops in 1936 were: rice, 118,837,200 pesos; maize, 15,713,900 pesos; sugar cane, 111,593,500 pesos; coconuts, 61,975,500 pesos; abaca, 19,641,300 pesos; tobacco, 3,729,300 pesos; maguey, 816,700 pesos; bananas, 8,037,600 pesos; and rubber, 481,400 pesos. Gold production for 1936 amounted to 633,126 fine ounces, valued at 44,318,742 pesos; and for the first four months of 1937, 58,506 fine ounces, valued at 4,095,457 pesos. New workings were undertaken at the Baguio mines and new rich deposits were discovered in Mindanao, the latter occasioning a gold rush. Chromite deposits are now being exploited successfully and export has begun.

Finances.—The standard of value is the peso (equivalent to 2*s.* approximately). Estimated budget figures for 1937 were: receipts, 65,817,400 pesos; expenditures, 64,767,138 pesos. Those for 1938 (passed by the assembly in 1937) were: receipts, 80,400,000 pesos; expenditures, 76,300,000 pesos. The cedula, or poll tax, was abolished in 1937, when the total receipts from taxation were estimated at 51,122,000 pesos. The public debt on Dec. 31, 1936, was approximately 91,161,000 pesos.

Defence.—The army is conscriptive, consisting of a reserve force of citizen soldiers between the ages of 21 and 50. The first class of 20,000 was conscripted on Jan. 1, 1937, and the second on July 1. There is also a small regular force, which will eventually reach some 930 officers and about 10,000 men. This force will take over the police duties now performed by the Philippine Constabulary. The army is purely one of defence and no real navy is planned.

PHILOSOPHY. In the sphere of philosophy, the year 1937 has been an average post-war year. The numerous philosophical periodicals have been well filled, and other philosophical publications have probably been as numerous as usual. In quality likewise the output has been normal. But nothing exciting has appeared comparable with the works of Bergson or of Croce, which elicited such wide and deep interest in the years immediately preceding the World War.

The most important event of the year has been the Ninth International Congress of Philosophy, which met in Paris during August. The congress had a membership of about 800, about a third of whom contributed papers, and many more took part in the various discussions. A notable feature of the meeting was the presence of a large number of priests and other clerics, a fact which may be regarded as evidence of the growing *rapprochement* between philosophy and religion in recent years. The congress resolved itself into six sections, which dealt respectively with the following groups of problems: (1) the present position of Cartesian studies; (2) the unity of science, and the methods of science; (3) logic and mathematics; (4) causality and determinism in physics and biology; (5) reflective analysis and transcendence; (6) value and reality. Prominence was given to the philosophy of Descartes in honour of the 300th anniversary of the publication of his *Discours de la Méthode* (1637), which is probably still the most popular introduction to the study of philosophy. The congress was, in fact, described as the 'Descartes Congress' for that reason.

Various other philosophical conferences were held in 1937, and some of them are enumerated here in chronological order. In March, the Southern Society for Philosophy and Psychology met in Columbia, South Carolina. In April, the Western Division of the American Philosophical Association held a meeting at Galesburg, Illinois. During May, there was a special conference, in New York City, on methods in philosophy and science. In July, the Aristotelian Society of London and the Mind Association had a joint meeting in Bristol. In August, the Second International Congress of Aesthetics met in Paris, immediately after the conclusion of the Ninth International Congress of Philosophy. In December, the Eastern Division of the American Philosophical Association held a meeting at Princeton.

As usual, a considerable portion of the philosophical literature of the year was devoted to various aspects of the history of philosophy, including new expositions of the teachings of the great philosophers. Platonism is the theme of a number of new books. There is *Plato's Conception of Philosophy*, by H. Gauss. *Plato's Cosmology*, by F. M. Cornford, contains a translation of the *Timaeus* with a running commentary, and is a valuable companion to *Plato's Theory of Knowledge*, by the same editor. In G. E. Mueller's *What Plato Thinks*, and R. H. S. Crossman's *Plato To-day*, Plato is, so to say, represented in modern dress. Such attempts to give life to ancient thinkers are quite plausible, and are not without historical precedent. In his *Phaedon*, for instance, Mendelssohn made Plato's Socrates speak like a philosopher of the eighteenth century. Of books on later Greek philosophy, mention may be made of D. R. Dudley's *History of Cynicism*. Mediaeval philosophy is represented by J. Ritter's *Mundus Intelligibilis*, which gives an account of St. Augustine's Ontology, and by E. Anagnine's *Pico della Mirandola*.

Turning to the modern history of philosophy, Descartes has received special attention on account of the tercentenary of his *Discours de la Méthode*. The Bibliothèque Nationale in Paris held a special Descartes Exhibition, organized by Ch. Adam and others. It contained over 900 exhibits of books, manuscripts, medals, pictures, and portraits relating to the life, work, and influence of Descartes. The French government issued a special postage stamp with a portrait of the philosopher. The *Revue de Métaphysique et de Morale* and the *Revue Philosophique* devoted each a special number to Cartesian philosophy; the *Rivista di Filosofia Neo-Scolastica* issued a special supplementary volume; and numerous articles on Descartes appeared in many other periodicals. There have also been published a number of books on Descartes: Léon Brunschvicg's *Descartes*; H. Gouhier's *Essais sur Descartes*; K. Jasper's *Descartes*; and F. Olgiati's *La Filosofia di Descartes*.

As regards books on other modern philosophers, Bertrand Russell's *Critical Exposition of the Philosophy of Leibniz* is particularly welcome in view of the growing interest in mathematical logic, of which Leibniz was one of the founders. In a new preface, the author describes, with justifiable satisfaction, how his principal thesis, namely, that Leibniz had based his philosophy on his logic, has received ample confirmation from Louis Couturat's *La Logique de Leibniz*, and his edition of certain literary remains which had been overlooked by previous editors of the works of Leibniz. Acccording to Russell, Leibniz had two philosophies: a logical philosophy leading to Spinozism—correct but indiscreet at that time; and an illogical philosophy—vulgarized, but successful in winning the admiration of princes and princesses. As Leibniz grew older, he kept his sound philosophy more and more to himself. Other books on modern philosophers are: R. I. Aaron's *John Locke*; C. Maund's *Hume's Theory of Knowledge*; G. Le Roy's *Maine de Biran*; L. Prat's *Charles Renouvier*; A. H. Murray's *The Philosophy of James Ward*; and R. M. Loomba's *Bradley and Bergson.*

The problems which received the greatest attention in the philosophical literature of 1937 were those commonly grouped under 'Philosophy of Science'. Of the numerous papers read at the Ninth International Congress of Philosophy, the papers devoted to these problems aroused the widest interest. They included papers by the brothers L. and M. de Broglie, Barzin, Enriques, Pos, and Reichenbach, dealing with causality, determinism, probability, empiricism, and rationalism, etc. The same problems also constitute the theme of a number of important books which have been published during the year. Ernst Cassirer's *Determinismus und Indeterminismus in der Modernen Physik* is a valuable companion to the same author's *Substance and Function,* and should likewise be made accessible to English-reading students of philosophy. Physicists who identify indeterminism with moral freedom will do well to study the closing section of the new book. Bertrand Russell's *Principles of Mathematics* has made a welcome re-appearance with a new and long introduction, in which the author explains some changes in his views, and defines his attitude towards the views of Hilbert, Weyl, Wittgenstein, Carnap, and others. The book is most opportune, as R. Carnap's *Logical Syntax of Language* has just appeared in English dress, and will help to enliven the debate between those who (like Carnap) regard the logic of science as 'a matter of linguistic choice', and those who (like Russell) do not. Other noteworthy books in this connexion are G. Bachelard's *L'expérience de l'espace dans la physique contemporaine* and A. C. Benjamin's *Introduction to the Philosophy of Science.* Of books on general philosophy the most notable are: *Personal Realism,* by J. B. Pratt, one of the founders of critical realism; *Nature and Mind,* by F. J. E. Woodbridge; *Structure and Reality: A Study of First Principles,* by D. W. Gotshalk; *Being and Being Known,* by W. C. Swabey; and *Beyond Humanism,* by C. Hartshorne.

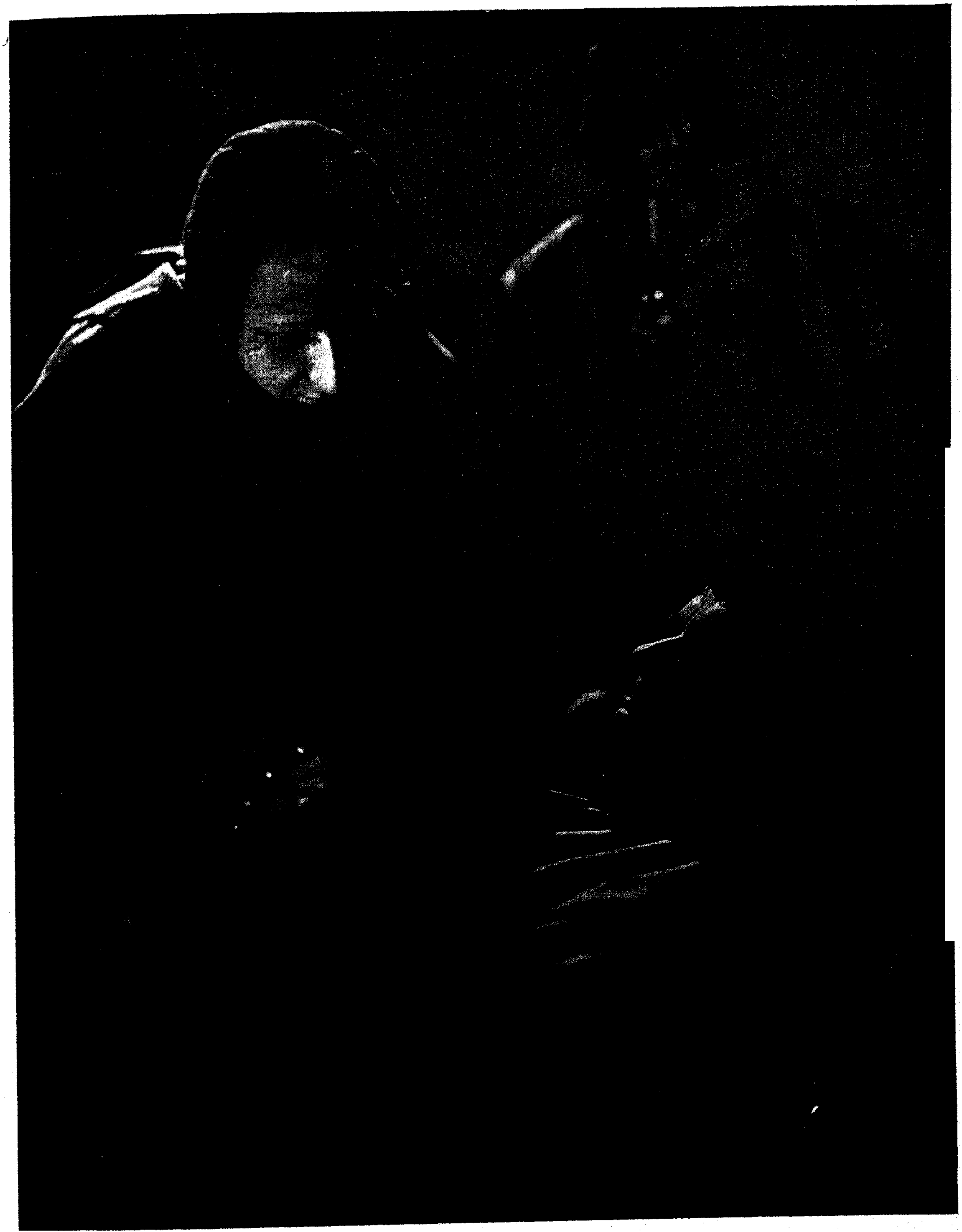
The philosophy of religion has not been neglected in 1937, and a few interesting books have been published. W. G. de Burgh, in his *Towards a Religious Philosophy,* discusses the general problem in a competent and persuasive manner. The new volume of Hibbert Lectures, *The Philosophical Bases of Theism,* by G. Dawes Hicks, deals with the special problems of Theism in relation to Pantheism, in a learned yet readable way, and seeks to put new wine into old bottles by an interesting re-interpretation of the old cosmological, teleological, and axiological arguments. The author's philosophical temperament shows itself in his high estimate of calm, rational reflection, as compared with the ecstasy that is so commonly taken or mistaken for religious experience. 'Thinking', said Hegel (when his landlady worried about his abstention from Church services), 'is also a divine service'. A more limited problem is considered in W. Kingsland's *Gnosis, or Ancient Wisdom, in the Christian Church.* With much patience and ingenuity the author attempts to unravel the Gnostic and kindred elements in Christianity, apparently for the special benefit of Theosophists.

The comparative study of the philosophical systems of different peoples is rather uncommon, perhaps on account of its intrinsic difficulty. However, a part of this difficult task has been courageously attempted, and accomplished with a considerable measure of success, in *Indian and Western Philosophy,* by Betty Heimann. The authoress is well equipped with a knowledge of Sanskrit and of the general history of philosophy. She shares Kipling's view that 'East is East, and West is West, and never the twain shall meet'. The main difference between Indian and Western world-views may be expressed, though not altogether accurately, by saying that the Western outlook is anthropological or anthropocentric, whereas the Indian outlook is cosmic, or at least terrestrial. The former attitude is seen in the dictum of Protagoras, 'Man is the measure of all things'; the latter, in a dictum from one of the Upanishads, 'This Ätman (the vital essence in man) is the same in the ant, . . . in the gnat . . . in the elephant . . . and in the whole universe'. There are obvious objections to this sharp antithesis, but the authoress takes cognizance of them, and discusses them in an interesting manner. A somewhat similar comparative study of more restricted range is P. T. Raju's *Thought and Reality, Hegelianism and Advaita.* (*See* also ETHICS.) (A. Wo.)

PHILPOT, GLYN WARREN, R.A., British artist; born 1884; died in London, Dec. 16, 1937. He was educated at the Lambeth School of Art, and studied under J. P. Laurens in Paris. Philpot achieved early success as a portrait painter; and he was elected A.R.A. in 1915 and R.A. in 1923. In 1933 he broke from tradition with his 'The Great Pan', which the Royal Academy asked him to withdraw, contending that it might be misunderstood. The complete change in the artist's style was further emphasized in an exhibition of his pictures at the Leicester Galleries in 1934. Examples of Philpot's work are to be seen in the Tate Gallery, of which he was appointed a trustee in 1935.

PHOSPHATES. Mineral phosphates, chiefly phosphate rock, a phosphate of calcium, are basic fertilizer material, and as such support an extensive producing industry. A world production of 11,760,000 metric tons in 1930 declined to 6,694,000 tons in 1932, and recovered to 10,300,000 tons in 1936. The United States is the leading producer, with 33 per cent. of the total, followed by the Soviet Union 15 per cent., Tunis 15 per cent., French Morocco 12 per cent., Ocean and Nauru islands 8 per cent., Algeria 5 per cent., and Egypt 5 per cent. These seven countries account for 93 per cent. of the total, and the remaining 7 per cent. is scattered among about 30 others. The general producing area in northern Africa, including Tunis, Morocco, and Algeria, contributed 32 per cent. of the 1936 total, and 50 per cent. in 1930, none of these countries having made material recovery from the depression drop. Although both Egypt and Ocean and Nauru islands suffered only a minor decline, and have recovered to a level well above that of 1930, the Russian output is the only one which has shown an exceptional growth, increasing steadily from 200,000 tons in 1930 to 1,498,000 tons in 1936. The United States output of 3,989,000 tons in 1930 dropped to 1,734,000 tons in 1932, and rose to 3,406,000 tons in 1936. (G. A. Ro.)

PHOTOGRAPHY. The year 1937 showed a growth of activity in the photographic field not equalled for many years past. The motion picture, commercial and amateur branches, was particularly affected. New photographic magazines appeared, and unprecedented use of photography was made in newspaper and magazine illustration. The most significant step was the establishment of colour photography as a prominent part of the industry, and the conclusion is justifiable that 1937 can be regarded as the beginning of a new era in which colour will largely replace black and white.



Howard Coster]

AN EXAMPLE OF MODERN IMAGINATIVE PHOTOGRAPHY BY HOWARD COSTER, F.R.S.A., ENTITLED 'THE DEATH OF ST. FRANCIS'

Motion Pictures.—Total cinemas in the world approached 100,000, more than half of which were wired for sound. The attendance at cinemas increased more than 10 per cent. over 1936. Anxiety over the possible effects of television as a rival was partially allayed as it appears that enormous sums must be spent before widespread exploitation becomes possible. However, improvements in 1937 in the design of electronic projection devices give promise of considerable enlargement of television screen area, the realization of which would vastly accelerate the evolution of television as a practical art.

Improvement in the quality of sound films resulted from the use of recording by ultra-violet radiation, and of special fine-grain films for white light recording. Improved high-frequency response, better wave form, and lower ground noise were attained. Although not new in 1937, the use of push-pull sound recording increased considerably during the year. The first public demonstration of stereophonic sound was given in New York, using twin sound tracks reproduced through separate channels by loud speakers placed at each side of the screen. A number of demonstrations of stereoscopic motion pictures in colour were given, using polarizing screens. Although stereoscopic photography still has considerable appeal, no process is yet available for theatre use which does not have the disadvantage of requiring individual optical viewing devices.

For the lighting of studio sets, increased use of arc lamps was noticed. They are employed exclusively for technicolor films, in conjunction with straw-coloured filters for some lights which are too blue in colour. Although a somewhat higher level of illumination is required for colour as compared with black and white, it has been much reduced during the year, and, in fact, in some cases it has been brought down to approximately the level used for a great deal of black-and-white work. New incandescent filament high-wattage lamps were developed in different types, all operating at the same colour temperature, because uniform colour quality of all types of lamp is essential for colour photography. New fine-grain negative and positive duplicating films were made available to give duplicates of a quality not obtainable before. Towards the end of the year, panchromatic negative film of exceptionally high speed was beginning to be used. Infra-red film was increased in speed and was used to an increasing extent for special effects in photography, particularly for simulating night scenes by daylight. Metro-Goldwyn-Mayer's film, *The Good Earth,* was entirely toned brown by uranium, marking a change in screen quality which was soon followed in other films.

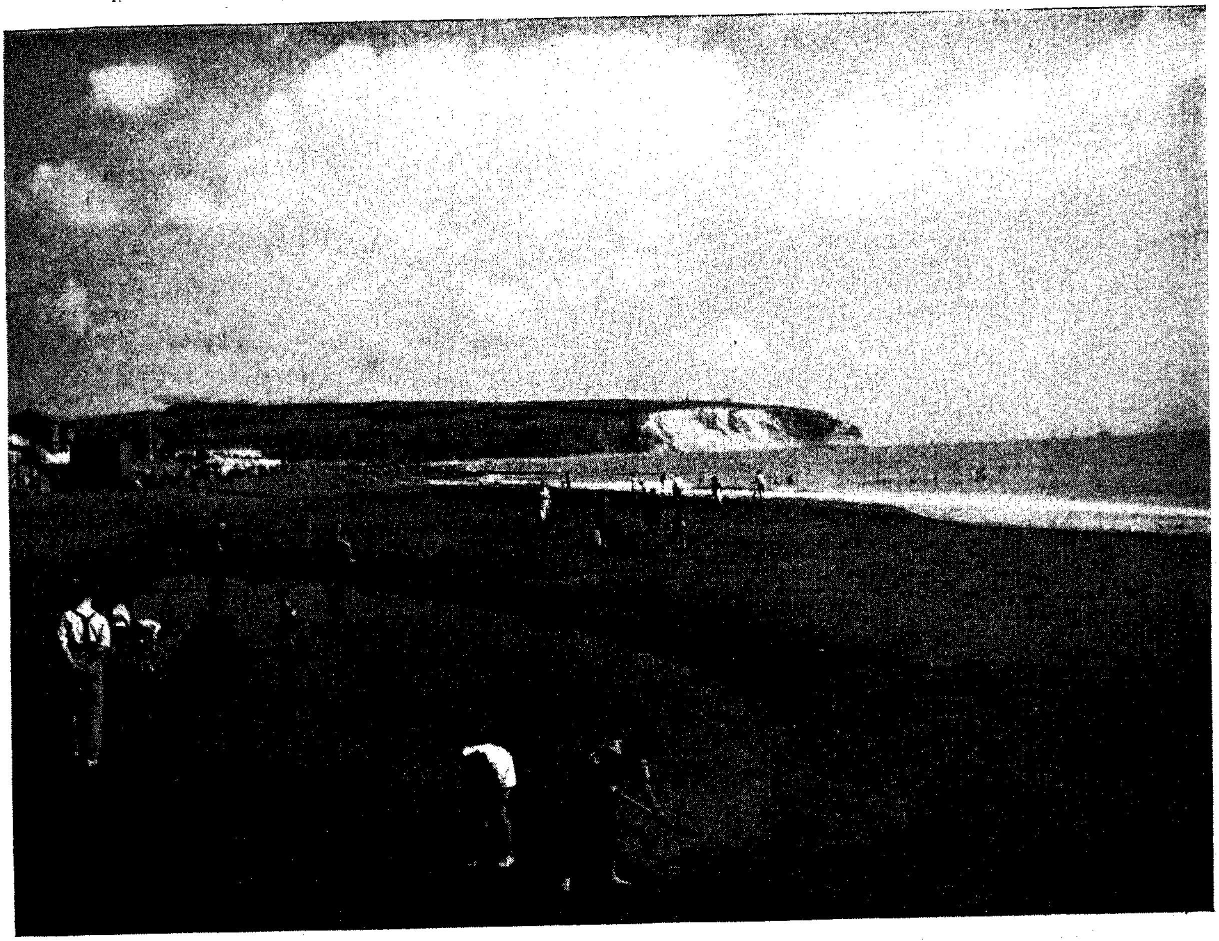
Colour Photography.—The year 1937 was notable for a great increase in the use of colour photography in the motion picture and amateur fields, and for commercial advertising and illustration. The *Technicolor* three-colour subtractive process was used practically exclusively for colour films shown in the theatres. The Disney *Technicolor* film, *Snow White and the Seven Dwarfs,* was the first feature-length colour cartoon, and was regarded as one of the outstanding achievements of the motion picture art. A new camera was employed to ensure proper relative size of background objects to illuminate various planes in a scene individually, and to achieve soft-focus effects on the backgrounds. The quality of *Technicolor* films showed a marked superiority over the films of former years. The coronation procession of King George VI was photographed in *Technicolor* and *Dufaycolour.*

'Still' colour photography was employed to a much greater extent in the commercial field as compared with previous years. In most cases, the original photographs were made as three-colour separation negatives in one-exposure mirror cameras, although for still-life subjects, the repeating back or even the normal camera was much used. Plates and films giving direct colour transparencies were used to some extent for magazine illustration. Those in most common use were *Dufaycolour, Finlaycolour,* and *Kodachrome. Dufaycolour,* increased in speed and improved in quality, was applied to some extent to geographical illustration, but mainly by Hollywood motion-picture studios, to provide colour transparencies for magazine originals. *Finlaycolour* continued to be used for geographical and commercial illustration. In general, however, there was a decline in interest in screen unit processes. The *Kodachrome* monopack three-colour subtractive film forged ahead as a medium for commercial work, general illustrative purposes, and lantern slides for lectures and display. The light sources used for still colour photography were confined to daylight, high-efficiency tungsten lamps, and flash lamps. No printing process was available by which colour transparencies could be printed on paper in a single step to give good colour prints, but such prints were made commercially in large numbers from separation negatives. Most prints were made by the *Carbro* process, but the recently introduced Eastman wash-off relief process found increasing application. Other printing processes used to a small extent were *Dyebro, Belcolour,* and *Defender Chromatone.*

The colour process most used by amateurs was *Kodachrome,* in 35mm. width in miniature cameras, and as 16mm. and 8mm. film in substandard motion picture apparatus. In the United States, about one-half of the amateur motion picture films were made in colour. In Germany, the *Agfacolour* process was introduced for miniature and amateur motion picture cameras. It employs a three-layer film based on the principle described some years ago by Fischer, in which dye-coupling components are incorporated in the emulsion.

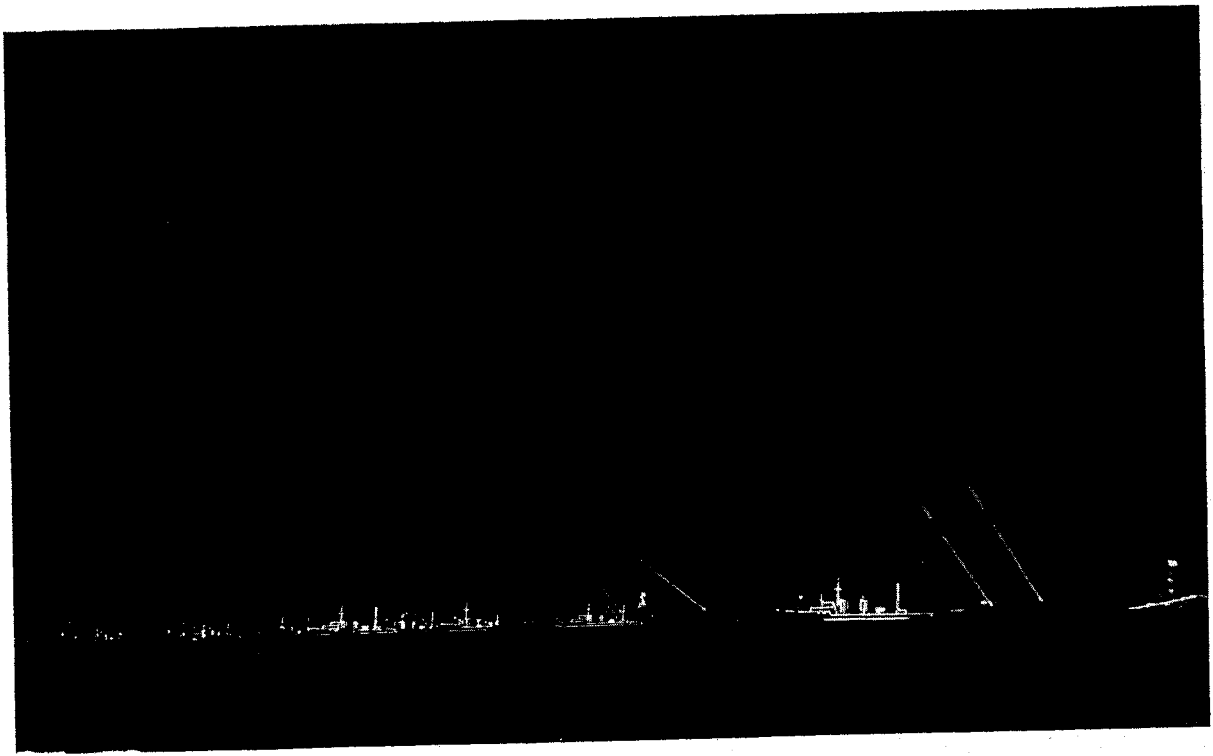
Documentary Films.—Outstanding progress was made in 1937 in the application of photography to the copying of documents. Many types of camera and projector were available for photographing and viewing printed material, commercial documents, etc., on 16mm. and 35mm. film. Particular interest was shown by libraries in making film copies of rare books available elsewhere as originals. Several newspapers file film copies of their daily issues, and in the United States copies were made on film of pension cards and the census cards of 1880. Documents are photographed on film with safety base, and tests made at the Bureau of Standards showed that they should be as durable as printed material on rag paper. They occupy about one-fifth of the space of the original documents, when made on 35mm. film.

Miniature Photography.—The interest shown in recent years in cameras taking small film—6cm. or less, usually 35mm. in width—continued through 1937. Cameras available range from very cheap models with fixed focal lenses to advanced models with high-aperture lenses, range finders coupled with the lens-focusing devices, automatic film winds, very rapid shutters, and interchangeable lenses and auxiliary attachments permitting extreme flexibility. The cameras are much used by press, commercial, and particularly advanced amateur photographers. The cameras are often used in extremely poor lighting conditions, for which extremely fast films are required, and the negatives are fre-



Kodak snapshot]

THE BEACH AT SANDOWN, ISLE OF WIGHT, TAKEN ON A 'PANATOMIC' FILM, 1/25 SECOND EXPOSURE



Kodak snapshot]

NAVAL REVIEW AT SPITHEAD. TAKEN WITH A 6-16 KODAK ON S.S. PAN. FILM, 5 SECONDS EXPOSURE quently enlarged to considerable magnification, necessitating the manufacture of films of very fine grain and of processing solutions which assist in its attainment. Many formulae have been proposed for fine-grain development. Most of these contain paraphenylene-diamine as the effective reducing agent, but attempts have been made to evolve formulae which do not require the use of this material, which produces marked dermatitis with many users.

Special Applications.—There was no important novel development in X-ray photography, although there was a notable general improvement in materials and technique. Chief of these was increased definition associated with extensive use of direct X-ray film, finer grained intensifying screens, and rotating target tubes. Marked interest was shown in the use of X-ray cinematography, and improvement in technique resulted in both the direct and fluorescent screen methods. Industrial radiographers benefited from a study of the characteristics of lead-intensifying screens by Seeman. Radiography using ultra-soft X-rays, developed particularly by Sherwood, has found many applications in the realms of biology, paper and textile technology, and the examination of works of art.

Aerial photography continued to be the chief implement of the topographical surveyor, and enormous quantities of film were used in a number of large projects, particularly in soil-conservation studies of large areas. It was also employed in increasing extents in forest and geological survey, and survey for pipe and electric-power transmission lines, in addition to map revision. New films for aerial photography included a fast infra-red film, a new panchromatic film of increased speed and contrast, and a special orthochromatic film for distinguishing scrub from sand, and such purposes. Films for topographical survey are usually made on low shrinkage support, and during 1937 printing papers having similar characteristics were made available.

Photography is one of the primary weapons of the astronomer. In 1937, photographs were made which resulted in the discovery of infra-red radiation in interstellar space. Plates very sensitive to the extreme red were used in the investigation of stars normally invisible through nebular haze. Photographs made by Major A. W. Stevens from high altitudes during the 1937 solar eclipse gave evidence that the corona was globular in shape.

Increased use was made of telegraphic means of transmitting pictures for press purposes, and portable apparatus was produced for use in the field. High-speed photography, either as still or motion picture photography, was rapidly becoming an important means of study in technological and scientific fields. New fast films were made to meet the increasing demands of press photographers. The importance of photography as a means of general illustration was clearly evident from a sudden increase in the number of picture periodicals. (C. E. K. M.)

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PHYSICAL FITNESS: *see* NATIONAL HEALTH AND FITNESS CAMPAIGN, THE.

PHYSICS. Nuclear physics was very popular as a subject for research in 1937. The emission of electrons and positrons by the nuclei of radio-active atoms was studied by several physicists with the object of testing Fermi's theory. Previous results made the number of electrons emitted with low kinetic energies much smaller than Fermi's theory predicted. H. O. W. Richardson and Alice Leigh-Smith devised a new method and obtained results which support Fermi's theory, and show that the earlier results were erroneous. Richardson put a small quantity of the radio-active element, in the form of a gaseous compound, into a C. T. R. Wilson expansion chamber, and obtained photographs of the tracks made by the electrons emitted by the radio-active gas atoms. This new method shows up the short tracks made by the low-energy electrons, which were difficult to count by the older methods, which required the electrons to pass through a thin plate into a detecting apparatus. The thin plate stopped most of the low-energy electrons, and it was difficult to determine the fraction stopped. Richardson's results show that there are many more low-energy electrons emitted than the older experiments indicated and so support Fermi's theory.

Another important result in nuclear physics obtained in 1937 was the discovery of nuclear isomers. Atoms with the same atomic number, that is, with equal nuclear charges and identical chemical properties, but with different atomic weights, are called isotopes, and have been known to exist for many years. Atoms with the same atomic numbers and also with equal mass numbers, that is, with very nearly equal atomic weights but different nuclear properties, are called nuclear isomers, and their existence was unexpected although it was suggested a long time ago that uranium X^2 and uranium *Z* may be nuclear isomers. This discovery may be compared with the discovery of chemical isomers, that is, compounds of the same composition but different properties, by Wohler about 1830. The existence of nuclear isomers probably shows that the protons and neutrons in a nucleus are arranged in a more or less rigid pattern with connexions or bonds between them just as the atoms in a molecule are arranged. If the protons and neutrons were moving about in the nucleus like the molecules in a drop of water, it is difficult to see how nuclei with equal numbers of neutrons and protons like the nuclear isomers could have different nuclear properties.

The existence of nuclear isomers was first clearly shown by A. H. Snell. He showed that the radio-active isotope of bromine of atomic weight 80 can exist in two forms. The beta activity of one form decays to half-value in 18 minutes and that of the other in 4·5hrs. This isotope can be obtained by four different nuclear reactions. Bromine of atomic weight 79, or Br^{79}, when bombarded by neutrons combines with a neutron, emits gamma rays, and is so changed to bromine of atomic weight 80, or Br^{80}. This reaction is conveniently represented by Br^{79} (n, y) Br^{80}, the first symbol in the bracket indicating the body absorbed and the second the body emitted. The other three reactions are Br^{79} (D, p) Br^{80}, where D denotes a deuteron or heavy hydrogen nucleus and p a proton, Br^{81} (n, $2n$) Br^{80}, where n denotes a neutron, and Br^{81} (y, n) Br^{80}. The third reaction, in which one neutron is absorbed and two emitted, is a new type of nuclear reaction.

The following table shows all the different types of nuclear reactions known at present. Z is the atomic number equal to the number of protons in the nucleus, so that the nuclear charge is Ze, and A is the mass number, so that the atomic weight is approximately equal to A.

The existence of unstable or radio-active nuclear isomers suggests the possibility of the existence of stable nuclear isomers. Stable nuclear isomers would be atoms with equal values of Z and A but slightly different atomic weights and different nuclear properties. For example, we should expect them to have different target areas for disintegrations due to collisions and to emit particles with different energies when disintegrated. An element consisting of a mixture of such stable nuclear isomers would give a mass spectrum with lines having a fine structure, that is, very narrow groups of lines instead of single lines. Nothing of the sort has so far been observed, possibly because the resolving power of mass spectrographs is not great enough to separate the lines in the very narrow groups.

Incident Particle	Emitted Particle	Z becomes	A becomes
Alpha . .	Proton	Z + 1	A + 3
Alpha . .	Neutron	Z + 2	A + 3
Proton . .	—	Z + 1	A + 1
Proton . .	Alpha	Z − 1	A − 3
Proton . .	Neutron	Z + 1	A
Proton . .	Deuteron	Z	A − 1
Deuteron .	Proton	Z	A + 1
Deuteron .	Neutron	Z + 1	A + 1
Deuteron .	Alpha	Z − 1	A − 2
Deuteron .	Two neutrons	Z + 1	A
Neutron . .	—	Z	A + 1
Neutron . .	Proton	Z − 1	A
Neutron . .	Alpha	Z − 2	A − 3
Neutron . .	Two neutrons	Z	A − 1
Neutron . .	Three neutrons	Z	A − 2
Neutron . .	Gamma ray	Z	A + 1
Gamma Ray .	Neutron	Z	A − 1

Investigations on the collisions between neutrons and protons were published in 1937 by Bonner and others. It was found that the distribution of the particles after the collision was symmetrical with respect to the centre of mass of the two particles. This shows that the interaction between a neutron and a proton is not appreciable at distances comparable with the de Broglie wave-length of these particles. Previous results had made the distribution very unsymmetrical.

Cosmic Rays.—Several important papers on cosmic rays appeared in 1937. Julian L. Thompson, using the results obtained by A. H. Compton and Turner on the variation of cosmic ray intensity with latitude on 11 trips between Vancouver, B.C., and Sydney, Australia, from March 1936 to Jan. 1937, showed that the intensity has a small daily variation. The maximum intensity is at about 1 P.M. and the minimum at about 1 A.M. The daily variation is about 5 per cent. Previous results had suggested such a small daily variation but were not conclusive. It seems probable that the sun emits some cosmic rays.

Blackett photographed more than 800 tracks made by cosmic ray particles in an expansion chamber in a magnetic field of 12,000 to 14,000 gauss. He found that slightly more than half (53 per cent.) of the rays were positively charged. The energy spectrum showed anomalies in the neighbourhood of $2{\cdot}5 \times 10^9$ electron volts, that of the negative particles showing a marked minimum at this energy. Particles with energies greater than 2×10^{10} electron volts were observed. The observed energy spectra were interpreted as being the absorption spectra of the cosmic rays in air. It was shown that a cosmic ray has a chance, about one in two, of being absorbed in air, presumably by shower formation, while passing through an energy range near $2{\cdot}5 \times 10^9$ electron volts. Blackett found that about 15 per cent. of the more penetrating cosmic rays at sea level may be protons, and considered it possible that all the primary rays above the atmosphere may be protons, some perhaps negative protons. Blackett also found that for energies between 0 and 3×10^9 electron volts the energy loss is several times greater than that due to ionization of the air, between 3×10^9 and 10^{10} about equal to the ionization loss and between 10^{10} and 2×10^{10} electron volts, again several times greater than the ionization loss. The excess energy loss over the ionization loss is due to radiation and shower production.

Bowen, Millikan, and Neher measured the cosmic ray intensity with Neher electroscopes at different heights at Madras, India, where the magnetic latitude is only 3° N. They found that the intensity has a maximum value at a height such that 90 per cent. of the atmosphere is below and 10 per cent. above. With 98 per cent. of the atmosphere below the electroscope the cosmic ray intensity was about 65 per cent. of that at the maximum. The differences between these results and those previously obtained farther north give the variation with height of the field sensitive part of the cosmic rays. The field sensitive part of the cosmic rays are the rays deflected by the earth's magnetic field which are stopped by the field near the equator but not farther north. The results show that the field sensitive rays get into equilibrium with their secondary rays after traversing not much more than 10 per cent. of the atmosphere.

Anderson and Neddermeyer and also Street and Stevenson have photographed many cosmic ray tracks in a magnetic field, and believe that there is evidence for the existence of a new particle with mass between those of the proton and electron. This quite unexpected result, if confirmed, will be of fundamental importance. The tracks, believed due to the new particle, had about six times as many droplets per centimetre as electron tracks, and so were like proton tracks. However, the curvature of the tracks was too great for proton tracks, because a proton with the observed curvature would have had far too little energy to make tracks of the observed length. The velocity of the particles was estimated from the number of droplets in the track, assuming this to vary inversely as the velocity squared, and so the mass of the particles was found to be about 130 times that of an electron, or about 13 times less than the mass of a proton. The new particle is supposed to have the same electric charge as an electron. Jauncey has suggested that such particles could be formed by the combination of an electron and a photon of sufficient energy. The energy of the photon would have to be greater than 65 million electron volts, but photons of such high energy may be present in cosmic rays.

The existence of this new particle has been confirmed by Nishina, Takenchi, and Ichimiya in Japan. They observed a cosmic ray track for which the product of the magnetic field strength and radius of curvature was equal to $7{\cdot}4 \times 10^5$, and after passing through 3·5cm. of lead became $4{\cdot}9 \times 10^5$. Assuming the loss of energy in the lead to be all due to ionization, these results indicate a particle with mass about $\frac{1}{10}$ that of a proton. They consider that the highly penetrating cosmic ray particles are all, or nearly all, these new particles, with very few, if any, protons or electrons.

Mechanical Developments.—A new form of high potential generator has been constructed at the University of Wisconsin by Herb, Parkinson, and Kerst, and generators of more or less similar design are in process of construction at several other places. This generator is contained in a steel tank 20 × 5½ft. Near the centre of the tank a metal cylinder is supported on a long tube of textolite, which is an insulator, and attached to the ends of the tank. The insulated cylinder is charged by means of two rubber belts running on pulleys. Each belt has a pulley inside the cylinder and another at the end of the tank which is driven by a motor. The belts are charged with electricity at the end of the tank and carry the charge to the insulated cylinder. In this way the cylinder can be charged until the air between it and the tank breaks down. With the air in the tank at 100lb. per sq.in. pressure, the cylinder can be charged to a potential of about 2,500,000 volts. A long vacuum tube extends from the cylinder to the end of the tank opposite the pulleys, and positive ions from an ion source in the cylinder are driven down the vacuum tube by the potential difference. The ions can be used to bombard targets of different elements and the resulting nuclear reactions studied.

At the University of California a new cyclotron is being constructed which is expected to give positive ions with about 50 million electron volts energy. The magnet for this cyclotron will weigh over 200 tons, and the whole apparatus will cost nearly $200,000. The high energy positive ions will be used to study nuclear reactions and to produce radio-active elements which may be useful for medical purposes. About a dozen large cyclotrons with magnets weighing up to 100 tons are being constructed at other places in America and Europe.

A great many papers on the properties of neutrons were published in 1937. It has been shown that neutrons probably have a negative magnetic moment of about two nuclear magnetons. Neutrons in bodies containing hydrogen at extremely low temperatures do not give energy to the hydrogen if the energy of the neutrons is less than that required to move a hydrogen atom from its state of lowest possible energy (ground state) to its first excited state in the body. A very exact new determination of the specific charge of electrons of e/m was published in 1937. It was found that $e/m = 1{\cdot}760 \times 10^7$ electromagnetic units per gramme. The value of the electronic charge is now believed to be $4{\cdot}80 \times 10^{-10}$ electrostatic unit, so that the mass of one electron is $9{\cdot}10 \times 10^{-28}$ gramme. The oil drop method and X-ray crystal lattice method now both give $e = 4{\cdot}80 \times 10^{-10}$. The oil drop method depends on the viscosity of air, and the value of the viscosity used in getting Millikan's old oil drop value $4{\cdot}77 \times 10^{-10}$ has been found to be slightly in error. (*See* MATTER, STRUCTURE OF; ISOTOPES OF THE LIGHTER ELEMENTS, SEPARATION OF; HEAVY HYDROGEN, etc.) (H. A. W.)

PHYSIOLOGY. The close dependence of physiological progress upon progress in other sciences, and particularly in physics and chemistry, continues to be apparent, and a large part of the factual matter and theoretical basis of modern physiology extends into the domains of biochemistry and biophysics. Investigations into the nature of the process whereby the activities of organs are controlled by nerves have aroused widespread interest. As an example, the heart, though able to beat quite independently of its nerves, receives a double nerve supply, the vagus and the sympathetic, the two supplies having functions approximately opposed to one another. The vagus nerve is inhibitory, and when stimulated causes the heart to stop or at all events to slow down its rate of beating. Conversely, the sympathetic supply when stimulated leads to an increased rate and force of beat. It was shown by Loewi in 1921 that when the vagus of a frog's heart was stimulated a substance was given off into the perfusion fluid which when administered to another heart caused it likewise to slow or stop. Similarly, when the sympathetic supply was stimulated, an accelerator substance was released and could be detected by its effect on a second heart. Many researches have sprung up in consequence of this demonstration of what was called the 'humoral transmission of nerve action'. The close similarity between the properties of the 'vagus substance', released from the heart by vagus stimulation on the one hand and acetyl choline on the other, soon led to the discovery of their identity. Acetyl choline is of immense potency, one 100 millionth of the body weight producing definite effects. It was further shown that acetyl choline is liberated, not only at the heart, but in all places supplied by the parasympathetic nervous system when the nerves of that system are stimulated. It might be anticipated, therefore, that when one parasympathetic nerve anywhere in the body was stimulated, the acetyl choline carried away from that part by the circulating blood would cause the effect to reverberate in the form of general parasympathetic excitation all over the body. This is not the case, however, because there is an enzyme in the blood, choline esterase, which rapidly hydrolyses the acetyl choline into the relatively inert substances acetic acid and choline. Thus the acetyl choline only acts at the site of its liberation, the finely branched nerve endings, and is then rapidly destroyed. It may, however, be spared from destruction by the previous addition to the blood of eserine in small concentrations, since that substance inhibits the activity of the choline esterase. In an animal previously dosed with eserine the results of local parasympathetic excitation become generalized and long lasting.

The substance produced by sympathetic stimulation is similarly liberated on excitation at nearly all sites supplied by the sympathetic nervous system, and closely resembles adrenaline in its physiological properties. Adrenaline, the hormone produced by the medulla of the suprarenal body has long been known to be liberated into the blood-stream, with resultant generalized effects, resembling those of activity of the whole sympathetic nervous system, when the splanchnic nerve is stimulated. What happens in the suprarenal medulla is thought by many to be merely a copy on a gigantic scale of what occurs at all ordinary sympathetic terminals when they are stimulated. Cannon and the Harvard school, however, are of the opinion that 'sympathin', as they call the sympathetic mediator, exists, in two forms, one causing the excitor effects and one the inhibitor, and is not identical with adrenaline. Whatever its nature, the mediator is relatively stable in the blood, so that generalized sympathetic activity of some degree often results from localized sympathetic excitation.

A further step was taken when it was demonstrated that in certain ganglia acetyl choline was set free when nervous impulses passed the junction, or synapse, connecting one relay or neuron with the next. The inference was drawn that acetyl choline acts as a mediator not only as between a nerve terminal and the tissue, *e.g.* muscle or gland, on which it acts, but also at the junction between one nerve relay and the next.

Arising out of these facts was the question as to the nature of the mechanism by which an ordinary muscle is activated by its motor nerve. Is this yet another instance of a localized liberation of acetyl choline, this time at the motor end plates in which the nerve fibres terminate in the muscle? It would seem that it is, and hence that nerve action is in all instances transferred by the liberation of a chemical mediator, either acetyl choline or adrenaline (or sympathin). Generalizing from this we have a convenient classification (Dale) of nerves into two groups: cholinergic, mediated by acetyl choline, and adrenergic, mediated by an adrenaline-like substance.

A further question and much controversy arose in another direction out of these researches, and illustrates the difference between the biophysical and biochemical viewpoints. Excitation is always accompanied by electrical changes, and these have been thought to be of the essence of the excitatory state, and, in fact, to constitute it. The controversy turns on the question whether excitation is transferred—*e.g.* from a nerve to a muscle—because of the electrical disturbance brought to the muscle when the nerve impulse arrives there, or whether the arrival of the nerve impulse causes a liberation of acetyl choline, which then excites the muscle. Whichever of the two processes is regarded as the fundamental one, the other must be viewed as a parallel and unessential accompaniment.

In the more purely chemical field steady progress has been made in the ever-widening field of sterol biochemistry. Among important sterols are the now quite numerous sex hormones, and the recent identification of the suprarenal cortex hormone as a sterol derivative closely related to the male hormone gives for the first time a reasonable explanation of the occurrence of cases of virilism in women suffering from tumours of the suprarenal cortex. It has been shown that the suprarenal cortical hormone has profound and far-reaching effects on the metabolism of the body, and these are still under investigation. One of its most interesting properties is its relation to the exchanges of sodium and potassium in the body.

Studies of the general metabolism of nerve tissue have likewise been fruitful, and particularly as regards the relation between the effects of lack of vitamin B and the accumulation of pyruvic acid in the tissue; the nervous symptoms of vitamin B_1 lack are believed to be due to some such altered metabolism of the nerve tissue, and both the symptoms and the abnormal products of metabolism quickly disappear when vitamin B_1 is restored. Together with the discovery of the exact structure and artificial synthesis of vitamin B_1, these investigations represent a considerable advance in our knowledge of the vitamins.

The investigation, in man and other animals, of the curious rhythmical electrical waves—the Berger rhythm—in the brain is one of the recent developments of modern amplification technique. (*See* PSYCHIATRY and PSYCHOLOGY, PHYSIOLOGICAL.) The waves occur at a frequency of about 10 per second, but only when the eyes are closed or in darkness; mental exertion causes them to disappear, as also does sleep. Their presence implies that for some reason the nerve cells (chiefly in the occipital region) discharge synchronously under certain conditions. BIBLIOGRAPHY: W. B. Cannon and A. Rosenblueth, *Autonomic Neuro-Effector Systems* (Macmillan Co., 1937); J. M. Luck, *Annual Review of Biochemistry*, vol. 7, 1938; *Physiological Abstracts*, vol. 22, 1937, 8; *Physiological Reviews*, vol. 17, 1937. (C. L. E.)

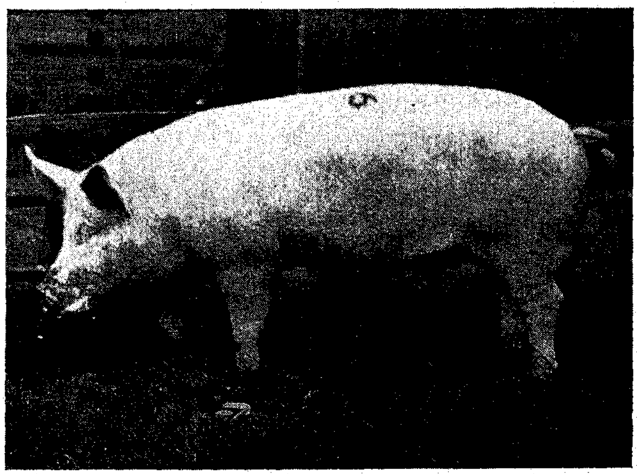
PIERNÉ, HENRI CONSTANT GABRIEL, French musical composer; born at Metz, Aug. 16, 1863; died at Ploujean, Côtes du Nord, France, in July 1937. At an early age he entered the Paris Conservatoire, where he studied under César Franck among others, and in 1882 won the Grand Prix de Rome with his cantata *Edith*. From 1890 to 1898 he was organist of Sainte Clotilde, having succeeded César Franck in that position. From 1903 to 1910 he was deputy conductor, and from 1910 to 1924 conductor at the Concerts Colonne. In 1925 he became a member of the Académie des Beaux-Arts; and he was a Commander of the Legion of Honour. Among the best known of Pierné's very varied compositions are the opera *Cydalise et le Chèvre-pied* (1923); incidental music to *La Princesse Lointaine* (1895) and *Ramnatcho* (1908); and the musical legend *La Croisade des Enfants* (1902).

PIGS MARKETING BOARD: *see* MARKETING BOARDS.

PIGS AND BACON. The British pig industry provides a striking contrast to that of Denmark, where the pig and butter industries are closely integrated, the pigs being fed largely on the skim milk. The Irish pig industry is also linked up with butter manufacture in much the same way. In Great Britain pigs are fed mainly on cereals and on most farms are subsidiary to other enterprises. Although output has expanded substantially in the last few years, mainly as a result of import restrictions, yet insufficient progress has been made in the improvement of quality. To improve breeding, producers have made little use of the Livestock Improvement Scheme; by 1937, not much over 1,000 out of 40,000 boars had been licensed under the scheme. Disease presents a serious problem in some districts.[1] Nevertheless, food recording has spread rapidly in the last few years. Feeding-stuffs constitute 70–80 per cent. of the total cost of producing a pig, and recording schemes enable a producer to determine the most economic method of fattening their stock for market. A study of pig industry conditions in the eastern counties, the first of its kind, was published in 1937.[2]

The economics of the pig industry are complicated by the fact that a pig can be transformed either into pork or into bacon and ham. The pig is generally killed for pork at the age of about 5 months and for bacon at the age of about 8–9 months. To a large extent, the same type of pig can be used for pork and bacon, and hence the producer has some degree of choice. The Pigs Marketing Board controlled only bacon pigs (one-third of the whole); and the existence of a large uncontrolled market contributed materially to the breakdown of the Marketing Scheme at the end of 1936. (*See* also MARKETING BOARDS.)

Bacon.—The popularity of bacon, the salt-cured meat prepared from the carcases of pig, as a breakfast dish among the English-speaking peoples of the world has made it an increasingly important article of international trade and of national legislation. In 1932, when the import of bacon into Great Britain reached 12,192,000cwt., pigs and bacon were made subject to the Agricultural Marketing Scheme, and the import was regulated, so that the total of imported and home-produced bacon and hams should



Sport and General]

LARGE WHITE BOAR 'WALL MAPLE'S DAVID'. FIRST PRIZE AND CHAMPION AT THE NATIONAL PIG BREEDERS' ASSOCIATION SHOW AND SALE AT PETERBOROUGH, OCTOBER 1937 approximate to 10,670,000cwt. per annum. In 1930, the home British production was estimated (roughly) at 1,424,000cwt., but this had grown in 1936 to 3,481,800cwt. and the import was 7,242,000cwt., of which Denmark supplied 3,373,000cwt., Canada 1,370,000cwt., and the United States 350,000cwt.

At the present time, the chief object of curing pig-meat is not preservation, but rather to impart a desired flavour; consequently, bacon is very mildly salted. Most of the production in Great Britain and the imported supplies are 'Wiltshire sides' (*see Ency. Brit.*, vol. 2, p. 890), but locally Ulster and Ayrshire rolls, Birmingham shoulder bellies, and Cumberland cuts are popular. A large trade has recently developed in tinned gammons, which are cut off from the side of bacon after curing.

Canadian, Irish, and Continental supplies, together with the bulk of the home production, are cured in factories producing 20–200 tons of bacon per week. The capacity of English factories has greatly increased in the last four years, and there are now between twenty and thirty factories with a capacity exceeding 1,000 pigs per week each. A small proportion of the British production is prepared in several hundred small premises, often engaged also in the production of sausages and meat pies, and the sale of these and of fresh pork and offals in associated shops. (*See* also AGRICULTURE.)

BIBLIOGRAPHY.—(1) Price and Ling, 'Pig Husbandry', *Bath and West Society Journal*, 1934; (2) Univ. of Camb. Dept. of Agric., Farm Economics Branch, *Report*, No. 25.

PIUS XI. As supreme pontiff of the Universal Church and vicar of Jesus Christ, Pope Pius XI is the 260th successor of St. Peter in the See of Rome, to which he was elected in 1922. An account of his career may be found in the *Ency. Brit.*, vol. 18, pp. 985-6. Late in 1936 the Pope had been seriously ill, but he recovered so well that on Feb. 14, 1937, he was able to leave his chamber.

Among the many documents issuing from his hand in 1937 were three notable encyclical letters: *Mit Brennender Sorge*, March 14, dealt with the persecution of Catholics in Germany and charged the Nazi government with a violation of its pledges; *Divi Redemptoris*, March 19, condemned the evils inherent in atheistic Communism and proposed the Christian means for saving society from the present chaotic conditions; *Ingravescentibus Malis*, Sept. 29, recalled devotion, through the rosary, to the Blessed Virgin as the protectress against heresies. Many apostolic letters were directed by him to the members of hierarchy throughout the various nations, treating of the problems affecting the Church. That sent to the Mexican bishops, *Nos es muy conceida*, March 28, was of exceptional importance.

On Feb. 8 his closing address was relayed by wireless to the International Eucharistic Congress at Manila. On July 11, he broadcast an appeal for prayers for a confused world on the occasion of the dedication of the Basilica of Ste. Thérèse, Lisieux, France. At a secret consistory on Dec. 13, at which he created five cardinals, he deplored the attack on religion in Russia and Germany, and the wars in Spain and the Far East. Again on Dec. 24, addressing the College of Cardinals, he specifically protested against the Nazi persecution.

BIBLIOGRAPHY.—T. B. Morgan, *A Reporter at the Papal Court* (New York); C. C. Eckhardt, *Papacy and World Affairs* (Chicago). (F. X. T.)

PLANETARIUMS, three-dimensional mechanical instruments, capable of showing the relative positions and movements of the sun, moon, and planets, have been in use for hundreds of years. The projection planetarium, however, is a modern development, the first one having been installed in Munich in May 1925. This instrument differs from the old type of planetarium in that it has no globes to represent the sun, moon, planets, etc., but instead depends entirely upon the projection of light. In the projection of the heavenly bodies, the new instrument is much more than a planetarium, for there are shown in a most realistic way, on an artificial sky-dome, all the planets, all the stars—including the Milky Way—all the heavenly bodies that can be seen by the best eyes under ideal conditions from any place on the earth's surface; and these are shown in their motions, both apparent and real. In these motions it is possible to show the rising and setting of the sun, moon, and stars, the apparent annual motion of the sun and the procession of the equinoxes. The observer's latitude can be changed to that of any point on the earth's surface from the North to the South Pole. One can travel forward or backward in time and show with great accuracy the skies for any period of history. The projection planetarium was invented by Dr. Walter Bauersfeld, of the Carl Zeiss optical works of Jena, and all the instruments have been manufactured by this firm. There are now (Jan. 1, 1938) 26 of these machines in the world. Four of them are in the United States—one each in Chicago, Philadelphia, Los Angeles, and New York—and a fifth has been ordered for Pittsburgh.

The popularity of these institutions is indicated by the attendance at the Hayden Planetarium in New York City, which had during the first two years of its operation nearly 1,500,000 visitors. The projection planetarium is perhaps the most important invention devised by man as a visual aid in teaching in any field. No description in words can give any adequate idea of its performance. The night sky of the planetarium, with its illusion of the immensity of space and the realistic representation of the stars, including the Milky Way, is an extraordinarily impressive sight. (C. Fi.)

PLASTICS INDUSTRY, THE. There has arisen during the past ten years a new, world-wide industry which had small beginnings about 60 years ago, and, although many have objected to the name of 'Plastics' which has been given to it, this name has now been accepted by all countries. The best definition that has so far been given to the word is that of an American firm, which aptly states that 'Plastics are man-made chemical combinations of Nature's raw materials. They are solid at ordinary temperatures, but when heated become soft and pliable. When moulded under pressure they take any desired shape and retain it'. This definition is true for all the materials of the industry, and can therefore be accepted as the practical one.

The materials which are generally accepted as being within the industry are the bitumens, casein, cellulose, and synthetic resins; but closely allied to them are hard rubber and the natural resins, particularly shellac, and all these materials are again subdivided into thermo-plastic and thermo-setting classes. By the former class is understood those that can be re-used by the application of heat, whilst the latter class are those that are irreversible after the initial heating has been applied.

The most striking developments that have taken place during 1937 have been in the thermo-plastic class, in which have been produced synthetic resins that have properties equal to that of quartz glass and have been used for such purposes as windscreens for aeroplanes and lenses for optical purposes and similar uses, where non-fragility is of the greatest value. A further development in this class is the enormous stride made in the injection process of moulding cellulose plastics, from which are produced such articles as spectacle frames, bezel frames, motor-car steering-wheels, bottle-caps, and a host of other articles.

In the thermo-setting class of plastics the year under review has been one of steady development and a widening of the uses of this class, one of the most striking being the development of a synthetic resin suitable for use in water-softening apparatus, whilst another is the application of laminated synthetic resin materials for decorative purposes, such as table-tops, wall-panelling, counter-tops, and doors.

Owing chiefly to the rapid growth of the industry and to the varying methods adopted by each country in the tabulation of their national statistics, it is not possible to obtain reliable figures of the production of plastics materials; but for 1935 it has been reliably estimated that 80,000 tons of synthetic resins and about 20,000 tons of cellulose materials were manufactured in the world, the principal countries being the United States of America, Germany, and Great Britain, in that order. Since that date, however, owing to the policy of restricting imports, Germany has, it is estimated, become the chief producer of plastics, especially in those products which can be utilized to replace imported natural materials such as rubber. Other countries which have devoted a considerable amount of attention to this industry are Japan, Russia, Italy, Norway, and Sweden. In fact, it might be said that there is no country in the world that has not enthusiastically taken up the production of plastics, and it can confidently be said that the future trend of this industry can hardly yet be predicted, having in mind the sources still awaiting investigation, such as the production of a uniform shellac, a resin based on sugar or alcohol, or a plastic material from the versatile soya bean. (E. J. W.)

PNEUMONIA. During 1937, favourable reports on the value of pneumonia serum continued to appear, not only for type I and type II for which serum treatment has become well established, but also for some of the newer types, particularly type V, type VII, and type VIII. The death-rate for these various types has been cut approximately 50 per cent. by serum treatment, but when serum is given very early, the reduction is even more marked, probably two-thirds or three-fourths. For the first time in history the physician now has at his disposal a serum of great value for the treatment of pneumonia and quick methods of making accurate bacteriological diagnosis.

Another contribution of great interest to the pneumonia problem was made by Horsfall and his co-workers at the Rockefeller Institute on the use of pneumonia rabbit serum in the treatment of lobar pneumonia. Twenty-two patients of various types were treated with type specific rabbit serum with only one death. Twelve of the 22 patients had pneumococcal bacteriemia at the time rabbit serum was administered. According to these writers, the results are even more spectacular than with horse serum, the product which has been in use up to the present time. The rabbit serum seemed to have an additional advantage, in that it penetrated the pleura in two cases and sterilized pleural exudates, thereby preventing the development of empyema.

One of the most important discoveries of recent years is the demonstrated value of sulphanilamide in the treatment of streptococcus infections. Streptococcus pneumonia is comparatively rare except in time of epidemics, but already physicians have discovered the value of sulphanilamide in streptococcus pneumonia. Claims have also be made by Heintzelman, Hadley, and Mellon that sulphanilamide is of value in the treatment of pneumococcus type III pneumonia. These claims, however, have not yet been substantiated. Another development of interest is a cinchona compound which is devoid of injurious effects on the nerves and still has a bactericidal action on the pneumococcus. It has long been known that certain quinine derivatives were highly toxic for the pneumococcus, and some of these, notably ethylhydrocupreine, have actually been tried on patients. Most of them, however, are too toxic to be used in large doses. Maclachlan and his co-workers report that hydroxyethylapocupreine has been administered in large doses to 200 patients without any visual or other nervous disturbances. The group of patients who received the cinchona derivative showed a 26 per cent. reduction in mortality over a control series, but these statistics may be open to criticism in several respects.

This brief review indicates that rapid progress is being made in the specific treatment of pneumonia, and that because of this progress we can look forward to definite reduction in the pneumonia death-rate during the next few years. (R. L. C.)

POISON GAS: *see* CHEMICAL WARFARE.

POLAND (Pol. *Polska*), republic of central Europe, member of the League of Nations. Bounded N. by the Baltic Sea, East Prussia, and Lithuania, E. by Russia, S. by Rumania and Czechoslovakia, and W. by Germany. Capital, Warsaw (*q.v.*). President, Ignace Moscicki (born 1867; elected 1926; re-elected 1933). National flag, white and red, in equal horizontal stripes, the former bearing the eagle and crown on a red shield.

Area, Population, and Cities.—Area: 150,052sq.m.; population: (1931 census) 31,942,027; (1936 estimate) 33,823,000:

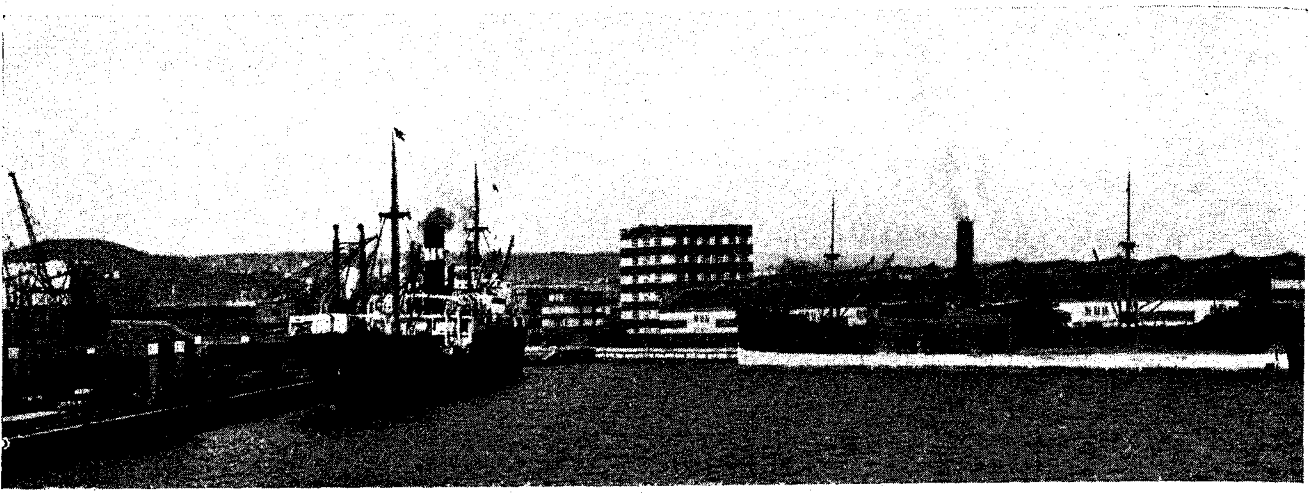
County	Area (sq. m.)	Population (1931)
Bialystok	12,525	1,643,485
Cracow	6,710	2,296,842
Kielce	9,880	2,936,976
Lodz	7,349	2,633,050
Lublin	12,037	2,467,266
Lwow	10,968	3,127,811
Nowogrodek	8,867	1,056,780
Polesie	14,158	1,131,455
Pomorze	6,335	1,086,259
Poznan	10,256	2,114,251
Silesia	1,628	1,298,352
Stanislawow	6,523	1,476,538
Tarnopol	6,383	1,603,313
Warsaw	11,378	2,530,675
Warsaw (City)	47	1,178,914
Wilno	11,201	1,275,269
Wolyn (Vilna)	13,805	2,084,791

Three-quarters were Roman Catholics; one-eighth Orthodox. There is liberty of conscience. Of languages, 69 per cent. spoke Polish, 16 per cent. Ruthenian, 9 per cent. Hebrew; there were 741,000 Germans (2·3 per cent.).

Elementary education is compulsory; all education is free. Statistics (1935–36): 27,990 elementary schools with 4,681,345 pupils; 755 secondary schools with 181,138; 6 universities and 18 high schools with 47,161.

After Warsaw, the largest town is Lodz (638,857); Lwow, Poznan, Cracow, Wilno exceed 200,000, and five others 100,000 (1937). Ports: Danzig (*q.v.*) and Gdynia (84,000).

History for the Year 1937.—The president is in supreme control; term of service, seven years. He appoints the premier (president over ministry of 10) and one-third of the senate (96); members of the Sejm (208) are elected for five years by universal adult suffrage. There are no political parties in either chamber.



Fox Photos]

POLAND. GDYNIA DOCKS

At home uneasiness was general. A return to the party system seemed possible. Incidents were appeals for unity, notably by Col. Adam Koc, leader of the Polish National Union, and Marshal Smigly-Rydz, Pilsudski's successor; the attempt to assassinate the former (July 17); the formation of three new parties; and a discussion between the president and the Socialists, with stabilizing results. Meanwhile, the four-year investment plan was extended (the year's expenditure on public works to be nearly £32,000,000). Anti-Semitic action broke out anew: Jews were unprecedentedly banned from the National Totalitarian party; the medical profession banned, and the lawyers restricted them; a serious pogrom occurred in Brest-Litovsk (May); the 'anti-Jewish month' proclaimed (September) by Fascist parties was rigorously observed. Suspension of the executive of the Teachers' Union led (October) to a teachers' strike. Hurricanes and floods occurred in May. In July, prices being already controlled, the embargo on the export of flour was extended to cereals until July 1938. There were peasant unrest and strike clashes.

The Danzig harbour protocol was extended until 1939. In September tension arose from Polish children in the Free City being required to attend German schools, but in November an agreement was reached with Germany on the treatment of minorities. The Silesia partition agreement having expired, its resuscitation was inconclusively explored. A loan from France of £25 millions included an arms credit of £12 millions. Col. Koc's defence programme was endorsed by President Moscicki. In March a trade agreement was made with Germany. An exchange of visits between the president and King Carol foreshadowed a Polish-Rumanian alliance. For the Lithuanian question, *see* LITHUANIA.

Trade and Communications.—Agriculture predominates; leading crops: potatoes and rye. In 1936 there were over ten million cattle and seven million pigs.

Natural resources include coal, iron, zinc, salt, naphtha and petroleum, and timber. Textiles and sugar are manufactured. Both imports and exports—1,003,435,000 zlotys (£40 millions) and 1,026,208,000 zlotys (£41 millions) respectively—showed a substantial increase (1936). Britain took nearly a quarter of the exports (bacon, eggs, timber, leading) and sent out goods to half their value.

The State railways had 12,480 miles open; there were 36,000 miles of roads and nearly 9,000 of navigable waterways. But means of communication (including telegraphs and telephones) await further development. The air lines recorded 5,842,000 passenger-kilometres and 543,000 mail-and-goods-kilometres (1935). The merchant navy is small; two liners were building in England.

Finance and Banking.—The unit of currency is the (nickel) *zloty* (at par, 43·38 zlotys = £1 = $4·87). The 1936–37 budget balanced at 2,221 million zlotys. The Bank of Poland issues notes (one-third covered); in circulation on Feb. 20, 1937: 951,382,000 zlotys. In the Post Office Savings Bank, 2,286,830 depositors were credited with 663,720,000 zlotys; there was as much again in others (1936).

Defence Forces.—The army (compulsory service) had (1936) 17,905 officers and 248,110 other ranks; the air force and navy were nuclear.

BIBLIOGRAPHY.—R. Machray, *The Poland of Pilsudski* (London, 1936); W. Sobieski, *Histoire de la Pologne* (Paris, 1934).

(H. Fw.)

POLICE. The 13th annual congress of the International Police Commission was held in England, in London, in June 1937. This commission, established in 1923 thanks to the efforts of Dr. Schober, police president of Vienna and subsequently chancellor of Austria, has met at various European capitals—Vienna, Berne, Paris, Rome, Antwerp, Copenhagen, and Belgrade. Its aim is to develop and co-ordinate measures and institutions for the suppression of crime and for mutual assistance between the police authorities of different countries. Twenty-six European, and five other countries, including the United States, are represented and send delegates to the annual meetings of the commission.

Among the matters considered at the London meeting in June 1937 were (*a*) the drug traffic; (*b*) the counterfeiting of securities; (*c*) passport forgeries; (*d*) standardization of criminal records and statistics; (*e*) telegraphic transmission of finger-prints; (*f*) prevention of international frauds, such as the Spanish prisoner and the buried-treasure swindles, etc. International criminals are naturally those to whom the commission devote special attention; they are more particularly the trouble of countries with land frontiers, but all suffer to some extent from them.

The work of the commission has resulted in valuable interchanges of information in regard to scientific aids for the detection of crime and improved methods of dealing with many other police problems. There is an increasing tendency among the English-speaking and other nations to learn from each other in police matters, and visits of police officers to examine conditions in countries other than their own are frequent. The year 1938 will see a member of staff of the Federal Bureau of Investigation at Washington (the now world-famous ' G men ') at the Police College at Hendon, established in 1934 by Lord Trenchard, and a reciprocal visit by a Scotland Yard officer to Mr. Edgar Hoover's department.

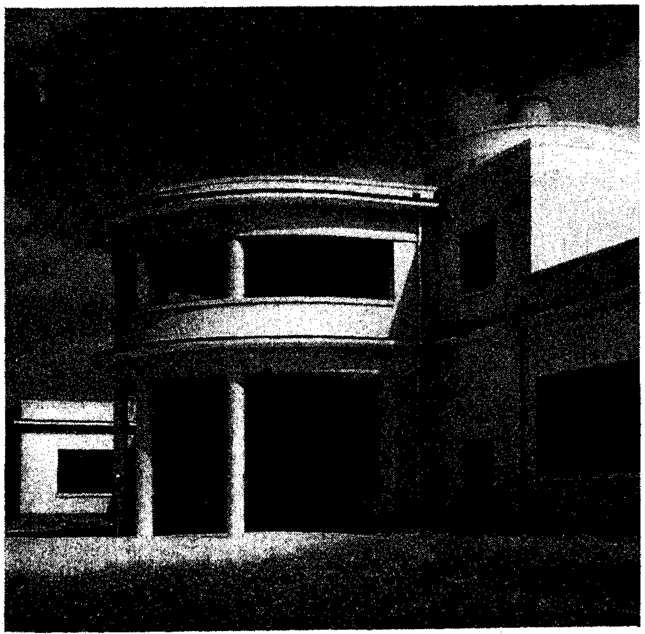
Apart from crime, the most important police problems in the large cities of the world are those arising in connexion with motor traffic. In Scotland Yard's annual report for 1936, regulation of traffic and the prevention of road accidents received the largest share of attention, because of the extent to which the police have increasingly to devote themselves to protecting life and limb on the roads. The same can be said of many other reports by chief officers of police. In no country, however, has there been, as yet, much, if any, progress in reducing casualties. The most that can be said to have resulted from legislation and police efforts to enforce it, and from the many devices for securing safety, such as better roads, pedestrian crossings, mechanical signals, etc., is that casualties have been prevented from mounting still higher.

The year 1937 was not marked by any very grave outbreaks of public disorder, except in countries where war or warlike conditions prevailed. In Paris there were Fascist-Communist riots in March, followed by a general strike. These disturbances were, however, much less serious than the riots of Feb. 1934, and perhaps the most noteworthy incident in connexion with them was the announcement that the French government had decided to withdraw firearms from the police ; but this has not yet come into effect.

In the United States in May there was a serious clash between steel strikers and the police in Chicago, when nine persons were killed and wounded, and similar troubles occurred in Trinidad and Barbados in June and July.

In Britain, small Fascist and Communist organizations have continued to attract more attention than they deserve. The Home Secretary found it necessary, under the Public Order Act, 1936, to prohibit processions of a political character in certain parts of London.

It is impossible, within the scope of this article, to give any detailed account of recent happenings or tendencies in the matter of crime and criminals. The character of the crime with which police have to deal differs considerably from country to country, but everywhere thieving forms the bulk of crime. The latest (Third Quarterly Bulletin, 1937) of the very valuable *Uniform Crime Reports* now issued for the United States and its possessions by the Federal Bureau of Investigation, shows that larceny, burglary or housebreaking, and the theft of motor-cars account for over 90 per cent. of crime ; and much the same holds good of every country. It is in respect of the balance of 10 per cent. that variations occur. In Britain, in contrast with Continental countries and America, crimes of violence continue to be very rare and murders are almost confined to detective stories. Particularly marked in some countries is the growth of juvenile crime. (*See* JUVENILE CRIME.)



Architecture Illustrated]

MAIN ENTRANCE TO NEW POLICE WIRELESS STATION, WEST WICKHAM. G. MACKENZIE TRENCH, ARCHITECT

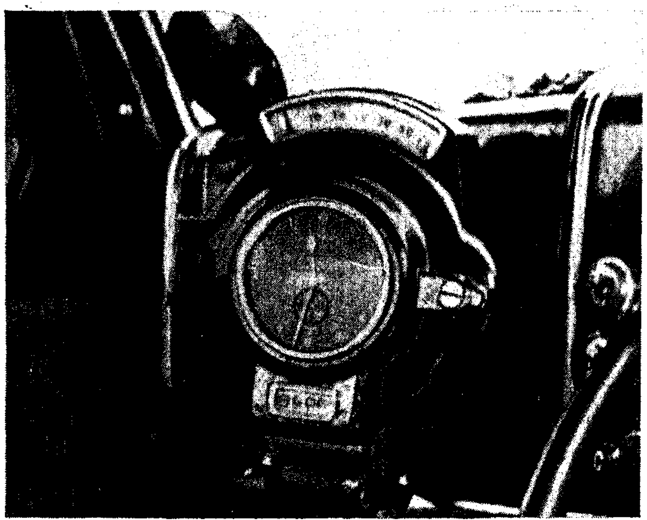
Fox Photos]

THE INTERIOR OF A POLICE VAN UNDER CONSTRUCTION AT THE NEW POLICE WIRELESS STATION, AT WEST WICKHAM

Every year sees increasing use made of scientific aids in the prevention and detection of crime. Most up-to-date forces now use wireless for the immediate dissemination to police patrol cars of information relating to crime, and the radio has led to the establishment of central information bureaux or complaint rooms at police headquarters, in touch with the patrols through the air and with the public by telephone. Large cities are also now generally equipped with call boxes, or 'crime-prevention kiosks', through which the public can get into instant communication with police stations, and the stations send out calls to the foot police on duty in the streets.

Finger-prints remain the unchallenged and most valuable aid to the identification of criminals, and Scotland Yard's single print system, which has enormously increased the speed of identification and the extent to which sub-classification can be carried, is coming everywhere into use. The *modus operandi* method of classification and detection has also now been generally adopted.

In most countries there is a branch of the police whose work has a political character, but recent years have brought out the marked contrast between democratic and dictatorship countries in this respect. In the former the political work of the police has to do solely with the security



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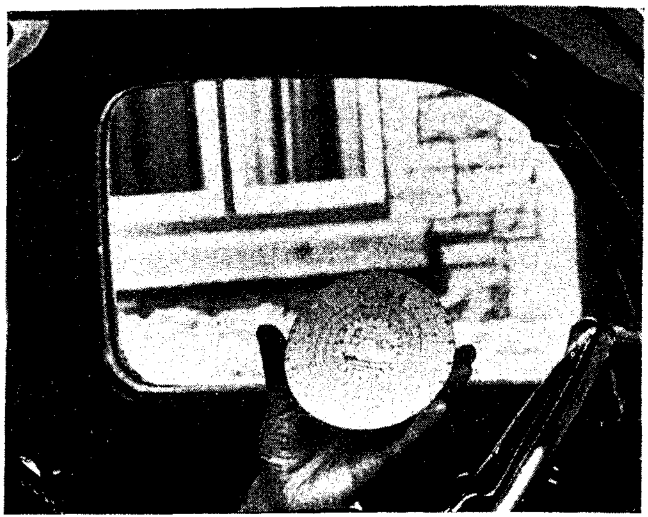
THE AUTOMATIC RECORDING SPEED AND STOP INDICATOR FITTED TO A PEMBROKESHIRE POLICE CONTROL CAR

of the State, in the ordinary meaning of that phrase ; that is to say, protection against political extremists, ill-disposed aliens, etc., and various measures necessary in the interests of national safety. In his recent book *The Police and Modern Society*, Mr. August Vollmer, the well-known ex-police chief of Berkeley, California, and professor of police science at California University, says ' Democracy's strongest reliance is the police '. This is equally true of dictatorship, but in a different sense. In the countries which still enjoy representative democracy the maintenance of internal law and order by an efficient and impartial police, using no disguise save for the prevention and detection of crime, has been well described as the prop that sustains society and the amenities of civilized life. Under the absolute governments that now hold sway in Germany, Italy, and Russia, the continuance of the existing régime is dependent on a secret police and a widespread system of espionage which is as destructive of individual liberty as any known to past ages. It is significant that Herr Himmler, the head of the secret police in Germany, has been mentioned as a likely successor to Hitler. The surest guarantee that the English-speaking countries possess against the establishment of a dictatorship is the absence of a secret police.

To end on a less serious note, a comparative study of the annual reports of different police forces brings out the essential similarity of police work the world over, and they all have their amusing features. For example, the New York police, who have as difficult a task as any, are not entirely occupied with gangsters. The report for 1936 gives statistics as to cats rescued from trees, roof-tops, etc. It was stated in the London papers recently that, when Scotland Yard appealed to the public to make more use of the machinery for obtaining the assistance of police in an emergency, a number of similar cat calls were received, and also an inquiry from a lady as to what to do with a beetle and a matchstick which she had found in her loaf of bread. In addition to cats, the New York report mentions monkeys, snakes, bears, birds, squirrels, and even alligators ' secured, destroyed, or delivered to owners '. That of the Royal Canadian Mounted Police (the ' Mounties ') ranges from details of murder cases, rum-running, wheat thieves (who have taken the place of the old cattle ' rustlers '), and the supply of walrus meat and ' green ' fish for police dogs, to the desirability of persons subject to periodic loss of memory registering their finger prints with the police, so that when they forget who they are they can call at the police station and find out. (J. F. Mo.)



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THE DISC CHART OF THE SPEED AND STOP INDICATOR, WHICH RECORDS EVERY STOP AND SPEED VARIATION. ITS EVIDENCE IS ACCEPTED IN COURT

POLIOMYELITIS : *see* INFANTILE PARALYSIS.

POLITICAL PROCESSIONS : *see* UNIFORMS AND PROCESSIONS, POLITICAL.

POLLOCK, SIR FREDERICK, 3rd Baronet, British jurist; born in London, Dec. 10, 1845 ; died Jan. 18, 1937. He was educated at Eton and Trinity College, Cambridge, and was called to the Bar in 1871 by Lincoln's Inn. Pollock was professor of jurisprudence at University College, London, 1882–83 ; Corpus professor of jurisprudence at Oxford, 1883–1903, and professor of common law at the Inns of Court, 1884–89. In 1906 he was elected a Bencher of Lincoln's Inn, was appointed to the Privy Council in 1911, and took silk in 1920. In 1888 he succeeded his father as 3rd baronet. Sir Frederick's chief work was done, not as a practising barrister, but as a legal historian, as is testified by the number and nature of his publications. In 1873 he married Georgina Harriett Deffell (*d.* 1935), and had a son and a daughter.

POLO. An outstanding feature of the 1937 season in England was the visit of the Australian Goulburn team, which consisted of the four brothers Ashton. This was their second visit, as they came as a complete polo team as far back as 1930. On this latest occasion they proved a great combination, crowning their season with victory in the champion cup, although in this contest P. Ashton was unable to take his place in the team.

The Hon. Keith Rous's Jaguars also had a most successful season. They were narrowly defeated by the Goulburn team in the final of the champion cup, and were victorious in the Roehampton open cup and the Coronation cup. The Ranelagh open cup was won by the Nawab of Bhopal's team, and the inter-regimental tournament by the 10th Hussars. At the Indian Empire garden party, held at Hurlingham, India beat a team chosen from the rest of the world.

Oxford won the annual contest with Cambridge by 12 goals to one.

One change in the laws of the game was on trial during the season. In addition to the free-hits from 60 and 40 yards, which could formerly be awarded as penalty for crossing, more severe cases were penalized by a free hit from

30 yards. The conclusion of the vast majority of those interested in the game is that the additional penalty rule was a wise innovation, and there is no suggestion of its deletion.

The national open championship of the United States, held at the Meadow Brook Club, Westbury, Long Island, was won by the Old Westbury team (Michael Phipps, Cecil Smith, Stewart Iglehart, and C. V. Whiteney). Santa Barbara, of California, won the national junior championship and the twelve goal championship, and the Huisache team from Houston won the inter-circuit championship for the medium and low goal players. The newly established far-western division of the intercollegiate championship was won by the University of Arizona, and the United States Military Academy won the eastern division.

Indoor polo, confined mostly to the east middle-west of the United States, showed a steady growth. The New York Athletic Club won the senior division of the national championships. A complete revision of the rules of play of the indoor game took place early in December, the most important change being the adoption of the outdoor free hit in place of the one-half point deduction for fouls. The new rules have proved popular with players and spectators alike.

POLYTECHNICS : *see* TECHNICAL EDUCATION.

POPPY DAY : *see* BRITISH LEGION.

POPULAR FRONT. The *Front Populaire* was formed in France (after various preliminary movements) at the beginning of 1936, as an electoral alliance between the Socialist, Communist, Radical, and certain smaller parties, on the basis of an agreed electoral programme. It won a handsome victory in the general election of 1936, and has provided the parliamentary backing for the governments of M. Blum (Socialist) 1936–37, and M. Chautemps (Radical) 1937, both including Socialist and Radical, but not Communist, members. The Blum government was driven from office in 1937 by the financial crisis, which took the form of a 'flight from the franc' by French capitalists distrustful of the government's measures. The Chautemps government, with M. Bonnet, a right-wing Radical, as minister of finance, sought to reassure the capitalists by measures of economy ; and the Socialists and Communists, though they disliked the turn to the right, supported the new government on account of the international situation.

The *Frente Popular* in Spain was also formed in 1936, as an electoral alliance of Socialists and Radicals on the basis of a common programme, and won an election victory similar to that of the *Front Populaire* in France. But in Spain this gave the signal for General Franco's armed rising.

In Great Britain, the movement for a Popular Front has not been officially accepted by any of the parties, though many individuals in the Liberal and Labour Parties are sympathetic to the idea. It is distinct from, though not necessarily antagonistic to, the movement for a United Front between the Labour and Communist Parties (*see* LABOUR PARTY). In a few constituencies (Chertsey, Stroud, North Oxfordshire) local Popular Front candidates have been adopted by the local Liberal and Labour organizations, but have so far been disavowed by the Labour Party head office. In general, British advocates of the Popular Front take the view that, for the present, the best method of furthering it is collaboration between members of the 'Left' parties on particular issues (Spain, China, collective security, the Means Test, nutrition policy), leaving over for the future the question of electoral collaboration. The Labour Party, hopeful of winning an independent majority for itself, is suspicious of any proposal for electoral collaboration with either Liberals or Communists. The Next Five Years Group, which includes progressive Conservatives as well as Liberals and Socialists, and Mr. Lloyd George's Council of Action, are not committed to the idea of the Popular Front, but tend in the same direction in matters of policy at home and abroad.

(G. D. H. C.)

POPULATION TRENDS. In 1770 the earth was inhabited by about 800 million people, of whom 155 millions were white. To-day the earth is inhabited by about 2,100 millions, of whom 730 millions are white. The proportion of whites has thus increased from barely one-fifth to fully one-third. The enormous growth of the whites was due to a reduction of mortality. But their growth has slowed down in recent years, because fertility has declined more than has mortality.

The usual method of establishing a balance of births and deaths consists in deducting the death-rate from the birth-

TREND OF NET REPRODUCTION-RATES, 1895–1935

	About 1895	About 1910	About 1925	About 1935
Over 1·8	Ukraine	—	—	—
1·6–1·8	Poland Russia Serbia	Bulgaria	Russia Ukraine	—
1·4–1·6	Austria Denmark Finland Germany Hungary Norway Sweden	Denmark Germany Norway	Bulgaria Poland Union S. Africa Japan	Russia (?) Japan
1·2–1·4	England	Austria Finland Sweden Australia New Zealand	—	Bulgaria Portugal Ukraine Canada Chile Union S. Africa
1·0–1·2	Baltic Provinces	England	Denmark Finland Hungary United States	Holland Iceland Irish Free State Italy Lithuania Poland Spain
0·8–1·0	France	France	Austria England Estonia France Germany Sweden	Czecho-slovakia Denmark Finland France Germany Hungary Latvia Luxemburg Northern Ireland Scotland United States Australia New Zealand
Under 0·8	—	—	—	Austria Belgium England Estonia Norway Sweden Switzerland

rate. But this computation does not take account of the age composition, and if the age composition—as is the case, for example, in the countries of western civilization—tends to swell the birth-rate and to reduce the death-rate, the error is bound to be cumulative. The best method of establishing the balance of births and deaths consists in computing the net reproduction-rate, which shows (on the basis of present fertility and mortality) the average number of girls that will be born to a newly-born girl in the course of her life, or, what amounts to the same, the average number of future mothers born to a mother of to-day.

Prior to the World War, the net reproduction-rate exceeded unity in every country of Europe except France. At present the rate is below one in all countries of western and northern Europe, with the exception of Holland and the Irish Free State; it is likewise below one in Austria, Czechoslovakia, Hungary, Finland, Estonia, Latvia, the United States, Australia, and New Zealand. It is below 0·8 in England, Norway, Sweden, Belgium, Switzerland, Austria, and Estonia. The only European countries in which it is above 1·2 are Portugal, the Balkan States, and Soviet Russia.

In western and northern Europe as a whole, the net reproduction-rate dropped from 1·3 in the 1880's to 0·8 in 1933–36. In central and southern Europe as a whole it still is about 1·15. For the whites as a whole it may also be around 1·15; but excluding Soviet Russia, it probably has not been above unity since 1932. For the white population of the British Empire it was probably below 0·9 in 1933–36. (R. R. K.)

PORTO RICO (Puerto Rico), a United States insular dependency in the West Indies, area 3,435sq.m., administered by a governor appointed by the president of the United States, and an elected bicameral legislature. Capital, San Juan; population (1935 census), 1,723,534. In 1930, 25·7 per cent. of the population was negro. Chief cities (with est. pop. in 1935), San Juan (137,215), Ponce (60,867), Mayagüez (44,907).

The outstanding features of the year's history were the political unrest, arising from dissatisfaction with the island's political status, and the striking economic improvement shown. Political turmoil, which had begun in 1936 with the militant Nationalist (minority) Party agitation for independence, continued, and on March 21, 19 persons were killed and over 100 wounded in rioting which followed police efforts to prevent a Nationalist parade at Ponce. By the close of the year, however, the high feeling had subsided, for the time at least. The insular government, co-operating with Federal agencies, particularly the Porto Rico Reconstruction Administration, pushed a comprehensive rehabilitation programme, the chief aims of which are industrial diversification and rural resettlement, in order to relieve the serious unemployment and to reduce the island's dependence upon sugar as a crop. New industries were furthered, and agricultural experimentation was undertaken, notably in tropical plants, such as vanilla and quinine. The total external trade was greater than in any but one year since 1930. Revenues reached a record high level and the budget was balanced.

Porto Rico has regular steamship communication with the United States and with other parts of the West Indies. Aeroplane service was further improved in 1937 by the installation of night-operating equipment. There are 493 kms. of railways, and an extensive highway system of 1,880 kms. of insular roads, supplemented by local roads. In the fiscal year ending June 30, 1937, $807,504.92 was spent on roads; for the next fiscal year, $750,000 has been allotted by the United States government to be matched by Porto Rico. In the fiscal year 1936–37, exports increased 16 per cent., to $114,953,827 (98 per cent. to the United States). Imports increased 18 per cent. to $98,875,491 (over 90 per cent. from the United States). Sugar comprised 64 per cent. of the exports.

The island is primarily agricultural, with sugar accounting for 70 per cent. of its income. Coffee (1937 production, 20 million lb.) chiefly for local consumption, tobacco (27 million lb.), grapefruit, pineapples, and sea island cotton are also important. Manufacturing is relatively small, but rum (supplying two-thirds of the United States demand), cigars, canned fruit, and fine embroideries are notable products. The monetary unit is the United States dollar. Revenues and expenditures for the year 1935–37 were $43,379,340.35 and $39,641,016.39 respectively. The insular government debt was $25,778,747.22.

In the year 1936–37, there were 1,711 primary and secondary schools, with an enrolment of 246,868, a decline from the previous year due to withdrawal of Federal aid. The University of Porto Rico, at Las Piedras, had an enrolment of 4,955, a 10·4 per cent. increase.

PORTUGAL (*República Portuguesa*), republic of western Europe, member of the League of Nations. Bounded N. and E. by Spain, S. and W. by the Atlantic Ocean. Capital, Lisbon. President, General Carmona (re-elected, 1935). National flag, green and red, halved vertically, with arms central.

Area, Population, and Cities.—Area (including Azores and Madeira): 35,490sq.m.; population: (1930 census), 6,825,883; (1935 estimate), 7,260,000:

Province	Area (sq.m.)	Population (1930)
ALEMTEJO (3 districts)	9,219	587,660
ALGARVE	1,937	300,762
BEIRAS (5 districts)	9,208	1,734,162
ENTRE MINHO-E-DOURO (3 districts)	2,790	1,465,298
ESTREMADURA (4 districts)	6,937	1,833,307
TRAS-OS-MONTES (2 districts)	4,163	439,158
ISLANDS	1,236	465,536

There is religious freedom, but Roman Catholicism is almost universal.

Despite compulsory education (since 1911), nearly a third of the people were illiterate (1930). Education figures for 1934–35: elementary pupils, 468,940; secondary, 18,621; in Lisbon, Oporto, and Coimbra Universities, 6,476. Principal towns (1930): Lisbon (594,390); Oporto (232,280); three others exceeded 15,000.

History for the Year 1937.—A new Constitution of 1933 established a dictatorship on a corporative basis. The president is elected for seven years by direct male and limited female adult suffrage. There is a single-chamber National Assembly (90, elected for four years; nominees of the National Union, which supports the premier-dictator, Dr. A. de O. Salazar), with a parallel corporative council. A privy council (10; appointed 1936) assists the president.

Incidents of the year at home included a great gale (late January) which wrought widespread havoc; the signature of an agreement (April) with Pan-American and Imperial Airways for exploratory trans-Atlantic flights via the Azores; and the escape, unharmed (July), of Dr. Salazer from attempted assassination by a bomb, when entering a Lisbon church.

The Spanish war has naturally been a leading concern. A strict neutrality was maintained, enlistment in Spanish forces being banned (February). But previously Portugal had sent a Note to Great Britain criticizing the closing of the Spanish frontier, and in June announced a reservation of attitude towards foreign observers, not uninfluenced by the withdrawal of Italy and Germany from the non-intervention scheme. Portugal has herself been rearming with machine-guns from Italy and rifles from Germany. In August a rupture of diplomatic relations occurred with Czechoslovakia over the non-fulfilment of a contract to deliver machine-guns to Portugal. Portugal alleged that their export was withheld under pressure by Russia, an allegation denied by Czechoslovakia.

Trade, Communications, and Finance.—One-quarter of the land is waste ; over one-third is under cereals ; over six per cent. under fruit, and over five per cent. under vines ; over one-quarter is forest (producing timber, cork, resin, and turpentine for export). After wine, fishing (especially for sardines) is the most important industry. Minerals await exploitation. Manufactures (textiles, etc.) are of minor importance. Trade figures (1935) : imports, 2,294,949,800 escudos (£20,863,120 ; a considerable rise) ; exports, 923,724,300 escudos (£8,397,500 ; a small rise). Great Britain takes rather less than one-quarter (chiefly wine).

Mercantile marine (1935) : 180 steam vessels (228,393 tons) ; railway mileage : 2,157 (449, narrow gauge) ; road mileage : 14,539. The State-owned telegraph and telephone systems are small, but a commercial telephone company serves the chief towns. There are 46 radio stations.

The currency unit is the *escudo* (at par, 110 escudos = £1 = $4.87). The Bank of Portugal alone issues currency : notes in circulation (30 per cent. covered), 2,199,309,000 escudos (1936). Savings deposits (1935) : 2,550,309,572 escudos.

Budget estimate (1937) : revenue, 2,424,276,000 escudos ; expenditure, 2,420,682,000 escudos. Total public debt—(1936) : £59,917,669.

Defence Forces.—Military service is compulsory. The army had (1936) 3,146 officers and 24,000 other ranks ; air force, 95 machines ; naval air service, 28. The navy (in 1935, 1,264 officers and N.C.O.s, and 5,509 other ranks) has 7 sloops, 6 destroyers, and 3 submarines. Military estimate (1935–36) : 403,200,000 escudos.

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PORTUGUESE EAST AFRICA : *see* MOZAMBIQUE.

PORTUGUESE GUINEA, a Portuguese colony on the west coast of Africa, situated 12° N. and 15° W., bounded N., E., and S.E. by French Guinea. The colony includes the neighbouring Bissagos Islands, which are of some strategic importance as a possible submarine base. The capital is Bolama. The area is 13,944sq.m., and the population (1933) 416,028. Imports and exports for 1936 were valued at £302,853 and £353,820 respectively ; and the estimated revenue and expenditure for 1937 were £248,256 and £245,026 respectively.

The islands of **São Tomé** and **Principe,** some 125m. off the coast in the Gulf of Guinea, form a separate Portuguese province under the administration of a governor. Their area is 384sq.m., and the estimated population is 59,055, of whom over 50,000 are in São Tomé. There is a 10-mile railway in São Tomê. The islands have an old-established cocoa industry, the relative importance of which has declined since the successful transplantation of the tree to the Gold Coast. Imports and exports (1935) were valued at £168,370 and £289,420 respectively, and estimated revenue and expenditure for 1937 were balanced at £88,400.

PORTUGUESE WEST AFRICA : *see* ANGOLA.

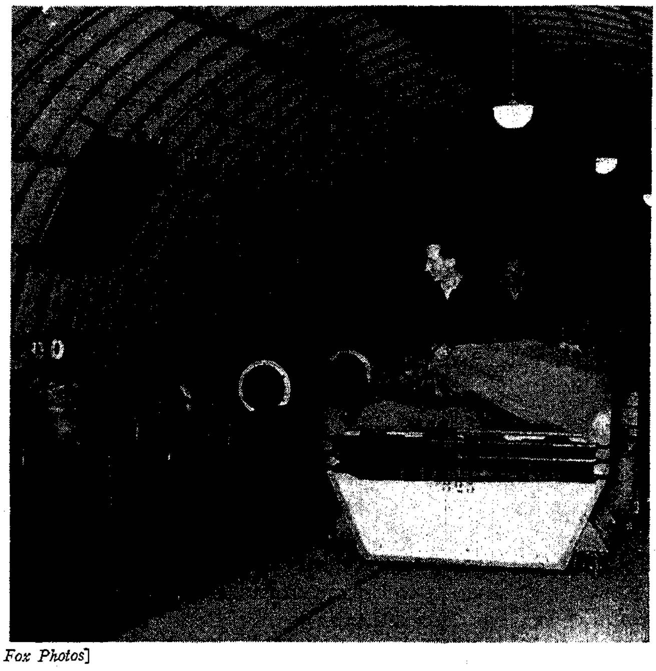
POST OFFICE. The continued growth of the business of the British Post Office was well maintained during the year ended March 31, 1937, the last for which complete figures are available. Transactions under all headings totalled £961,948,000, an increase of £61 millions over 1935–36. Letters, post cards, etc., reached a new high record at 7,700 millions, an increase of some 350 millions, and parcels showed an increase of 12 millions at 174 millions.

Mount Pleasant, the largest London distributing centre, handles in an average week nearly 23 million letters, about 827,000 inland parcels, and 61,000 imperial and foreign parcels. Over 211 million advertising circulars were posted there in batches during the past year. The returned letter (or ' Dead Letter ') section deals for London alone, with about 60,000 letters per week, which, mainly because of wrong or insufficient addresses, are undeliverable.

For the second year since the introduction of the sixpenny rate, inland telegrams showed an increase, the number being 49¼ as against 44½ millions in 1935–36, while overseas telegrams rose by half a million to 9¼ millions. Part of the rise in the use of inland telegrams is due to ' Greetings ' forms, 3 million of which were handled by the Post Office during the year, and part to the facilities for transmitting messages by combined telephone and telegraph.

Money orders issued totalled over 16 millions with a value of £65¼ millions, an increase of 500,000 in number and £3¼ millions in value, and postal orders issued reached a new high record at nearly 344 millions in number and £88,900,000 in value, an increase in the year of about 32 million orders and £8 millions.

Important developments took place during 1937 in the carriage by air of overseas first-class mail. At the end of June, the first stage of the Empire Air Mail scheme was brought into force on the route to South Africa ; and all letters and post cards for East and South Africa, including the Anglo-Egyptian Sudan and Mauritius, are now dis-



Fox Photos]

LOADING A TRAIN WITH MAIL BAGS ON THE POST OFFICE PRIVATE RAILWAY AT MOUNT PLEASANT, LONDON patched by air as the normal means of transmission, at 1½*d.* per half-oz. for letters and 1*d.* for post cards.

It is expected that the second stage of the Empire Air Mail scheme, embracing Egypt and Empire destinations on the England–India–Malaya air route, will be introduced early in 1938, and that the final stage, to Australia, will be completed during the year.

The year 1937 also saw the extension and acceleration of the service between England and the Gold Coast, and a marked development of the policy initiated in 1936 of dispatching first-class mail for European destinations by air on weekdays at the ordinary international postage rates. Air-mail services were also established between Southampton and Jersey and Aberdeen and Shetland.

Among the services which the Post Office performs for other government departments, War Pensions and Army Allowances, etc., paid showed a normal decrease in number from 48,100,000 in 1935–36 to 47,800,000; Old Age, Widows', etc. Pension orders paid totalled 175,800,000, an increase of about 3½ millions.

Health and Pensions Insurance stamps sold amounted to £55,800,000 against £49,500,000 in the previous year. The sale of 41,500,000 Unemployment Insurance stamps showed a drop of 400,000, but these figures were affected by the increased rate of Pensions contribution, the inclusion of agricultural workers in the Unemployment Insurance scheme, and the reduction in rates of Industrial Unemployment Insurance contributions between Jan. and July 1936. Despite these factors, however, both Health and Pensions and Unemployment Insurance stamp sales showed an increase of about 5 per cent., corresponding roughly to the increase in number of insured workers employed.

Licences issued, other than wireless licences, increased from 4,337,000 in 1935–36 to 4,451,000, this being the highest total in the past 10 years. The approximate number of wireless licences in force at the end of the year was 8,479,600.

For the other main departments of the Post Office, *viz.* Savings Banks and Telephones, *see* these headings. (L. H. D.)

United States.—The audited revenues of the Post Office Department for the fiscal year ended June 30, 1937, amounted to $726,201,109.89, which was the largest in the history of this service, exceeding by more than $20 millions the previous record year of 1930. The increase over the previous fiscal year amounted to 9·8 per cent. Of the total income, $643,561,093, or over 88 per cent., was from postage. The audited expenditures for the department during the fiscal year were $772,815,842.22, leaving a gross deficit which includes various non-postal items such as franked mail, air mail and Merchant Marine subsidies, penalty mail, and publications free in county, of $46,614,732.33. Deducting all these non-postal items, which total $59,258,471.37, as authorized by Act of June 9, 1930, there remains a net postal surplus of $12,643,739.04 for services rendered for hire. This was the third net postal surplus during the past four years.

In addition to its customary functions, the Post Office Department has performed many other important public duties, including the distribution of Adjusted Service Bonds to veterans, the registration of approximately 33 million persons under the Social Security Act, the collection of much of the data relating to the recent census on unemployment, and the sale of United States Savings Bonds to the amount of $412 million.

Air Mail.—During the year both domestic and foreign air-mail services have shown a tremendous growth. At the end of the calendar year the aggregate length of all domestic air-mail routes was 31,991 miles, within nine miles of the statutory limit in effect on Dec. 31, 1937, and representing an increase of approximately 2,500m. during the period. A total of 19,553,000lb. of air mail was transported during the fiscal year, as compared with 15,377,000lb. during the fiscal year 1936. The revenues during the same period increased from $9,702,000 to $12,439,000. While no new routes were established within the fiscal year, several extensions were made and the frequency of schedules on important routes was increased.

There was a substantial growth in the amount of mails carried by air to foreign countries, amounting to 41·8 per cent. in mails dispatched and 30·1 per cent. in mails received. Thirty thousand route miles are now embraced in the foreign air-mail service, over which 4,445,591m. were flown during the fiscal year. Service on the trans-Pacific route beyond Manila to Macao and Hong Kong was inaugurated on April 21, 1937. An average of approximately 400lb. of air mail is being handled on the trans-Pacific route in each direction.

During the fiscal year 1937, 326 new and additional Federal buildings were occupied, 26 extensions to existing buildings were completed, and 24 new Federal buildings replaced a like number of old buildings which had become inadequate for government purposes.

Nearly 400,000 people earn their living in the postal service, of whom rather more than 250,000 are regularly employed. (H. BH.)

POTASH. The crude potassium salts output of the world is almost exlusively the chloride or sulphate, with a small proportion of nitrate and carbonate, produced primarily for fertilizer use; only a very small amount goes into industrial chemicals, and even in the United States, where the industrial demand is probably higher than in any other country, with the possible exception of Germany, the chemical salts comprise only about 10 per cent. of the total. World production decreased from 2,800,000 metric tons of K_2O equivalent in 1929 to 1,400,000 tons in 1932, increasing to 2,400,000 tons in 1936, distributed as follows: Germany 60 per cent., France 15 per cent., United States 9 per cent., Soviet Union 8 per cent., Poland 4 per cent., and Spain 3 per cent.; half of the remaining 1 per cent. comes from Palestine, and the other half from several still smaller sources.

POTATOES: *see* ROOT CROPS.

POTATO MARKETING BOARD: *see* MARKETING BOARDS.

POULTRY. The poultry population of Great Britain on agricultural holdings rose from 35·8 millions in 1924 to 71·3 millions in 1934. By 1937 it had declined somewhat to about 61 millions. These figures must be increased by some 30 per cent. to cover poultry on holdings of less than one acre, and those kept in private gardens and backyards. Annual egg yields per bird have risen from 72 in 1908 to 120 in 1930, and probably to a rather higher figure in 1937. The bulk of the expansion has occurred near the large consuming markets, or in districts such as East Anglia, where other branches of farming became particularly unprofitable.

The central problem of the industry is the high rate of mortality both in breeding and, through disease, in the laying flock. An extensive inquiry, covering three years, showed that the number of chicks transferred to brooders amounted to only 60 per cent. of the number of eggs set.[1] Further losses occur in rearing, so that, as a Welsh survey has shown, only about half the eggs set produce chickens which reach maturity. In the laying flock, disease causes a loss to the industry which for 1937 was estimated at £4 millions. The cost of 'depreciation', which as well as deaths includes culling and selling, themselves aspects of the lack-of-stamina problem, amounted to between 2½*d.* and 3*d.* per dozen in the Welsh survey. By the blood-agglutination test, certain diseases such as bacillary white diarrhoea and fowl typhoid can be detected, and vaccines give immunity for a few months to particular diseases. But the most serious poultry diseases of to-day, lymphomatosis (fowl paralysis) and coccidiosis, still baffle the research worker. So far the Accredited Breeders Scheme has not proved satisfactory. The Poultry Technical Committee, reporting in Jan. 1938, recommended compulsory registration and inspection of all distributors of stock (eggs and chicks), a voluntary grading system for breeding farms with State assistance by way of premiums and free veterinary services, regulation of auction sales, establishment of progeny-testing stations, increased provision for research and education, and the creation of a Poultry (Stock Improvement) Commission to supervise these measures in Great Britain.

The chief marketing problems are the seasonality of the supplies and the competition of imports. The home output of eggs is about two and a half times as large in April as it is in November. Prices fluctuate over a similar range; and the fluctuations appear to be no less to-day than before 1914.[2] But in the last few years first cold storage and more recently gas storage have begun to be used in place of the lime-water and water-glass methods. As yet only a small proportion of the supply is stored. If this practice develops, it will favour the large packing stations as compared with the small producer.

Imports of eggs in shell in 1936 and 1937 totalled about 2,400 millions, very much the same quantity as in 1912–13, when imports constituted 63 per cent. of the total supply; in 1937, however, they only constituted 38 per cent. owing to the increase in the home output. Just under one-third of the imports come from Denmark and about one-quarter from Empire countries. Shipments from the southern hemisphere, notably Australia, have increased rapidly; and since these arrive chiefly in the off-season, they help to reduce the seasonality of supplies. In 1934 and 1935 imports were steadied by voluntary restriction agreements with the principal supplying countries, and the quotas were arranged to reduce seasonal fluctuations in supply. The agreements were discontinued. The tariff, however, helps to reduce fluctuations. It varies from 1*s.* to 1*s.* 9*d.* per long hundred, according to weight of eggs, but being a specific duty, its burden is felt most when eggs are cheap; for instance, in 1937 it represented a 20 per cent. *ad valorem* duty on Danish eggs when prices were lowest and only 10 per cent. when they were highest.

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PRECIOUS STONES: *see* GEMS AND PRECIOUS STONES.

PRESBYTERIAN CHURCHES. Known as the Reformed Churches holding the Presbyterian System, there are some 36 separate churches on the continent of Europe, with 3,016,201 communicants and 9,767,680 baptized persons, not counting Russia, for which country there are no returns.

In the British Isles, there are 10 of these churches, of which the following have the largest membership: the Church of Scotland, 1,288,648 communicants and 432,453 pupils in Sunday Schools and Bible Classes; the Presbyterian Church of Wales, 182,221 and 128,970, respectively; the Presbyterian Church in Ireland, 113,811 and 94,962; the Presbyterian Church of England, 81,715 and 46,474, and the United Free Church of Scotland, 21,826 and 11,336.

In Asia, there are 16 distinct churches, including the Church of Christ in China (123,043 communicants) and the Presbyterian Church in Korea (109,044), with a total communicant membership of 597,931 and 693,477 on the Sunday School registers. In Africa, including the Dutch Reformed Church in South Africa with 340,993 communicants, there are 17 churches having a communicant membership of 726,594. In North America 18 churches have a membership of 4,479,864; in South America there are 12 churches, and in the West Indies, four. In Australasia, the Presbyterian Church of Australia, the Free Presbyterian Church of Australia, and the Presbyterian Church of New Zealand, with a missionary synod in the New Hebrides and French churches in Oceania, have 106,252 communicant members and 131,128 Sunday School and Bible Class pupils.

Taken altogether, the Reformed Churches of the world had in 1937 10,714,366 communicants, an increase of 799,203 since 1933; and 21,628,577 baptized persons, an increase of 277,062 in four years. Of Sunday School members, there were 6,312,481, a decrease of about 100,000 in four years.

The 15th Quadrennial Council of the General Presbyterian Alliance was held with great success at Montreal, Canada, in June 1937, representative through their delegates of some 50 million Presbyterians scattered about the globe. During the proceedings the governor-general, Lord Tweedsmuir, gave a memorable address. The president was Dr. W. A. Curtis, Principal of New College, Edinburgh, and the troubled situation of many Reformed Churches in Europe and in Manchuria gave great concern to the Council.

The president of the Alliance (1937–41) is the Rev. Robert Laird, D.D., of Toronto, and the next Council will meet in 1941 at Geneva.

Owing largely to the influence of the great œcumenical conferences held in Great Britain in the summer of 1937, there are definite evidences of a desire for closer relationships among the Presbyterian Churches in the United States. It is likely that negotiations will shortly be initiated between the Presbyterian Church in the United States of America and the Presbyterian Church in the United States (Southern), looking to the reunion of these two communions which once were one, and that the efforts so active a few years ago, looking to the union of the United Presbyterian Church of North America and the Presbyterian Church in the United States of America, will be renewed.

That new venture of Christian faith, the Evangelical and Reformed Church, which was initiated in 1934 by the merging of the Reformed Church of the United States and the Evangelical Synod of North America, has been advanced by the adoption by the General Synod of a constitution and by-laws, and their submission to the constituent districts and classes for study and future report.

The Presbyterian Church in the United States (Southern) is now engaged in raising a three-million-dollar 'Accrued Liability Fund', in order that its Ministers' Annuity Fund may be put in operation. The Reformed Church in America has carried on a campaign for 'greater things' which resulted in the raising of $555,000 for benevolent purposes, or $24,000 more than the projected budget.

The Presbyterian Church in the United States of America reports marked increases during the year 1937 in communicant membership and in gifts for current expenses and benevolences. At the last meeting of its General Assembly, it appointed a committee to study and to suggest amendments to the portions of its Constitution which are concerned with the relations of church and State. A committee which has been studying the problem of adequate ministerial compensation throughout the church is also continuing its work. Altogether, the year was one of satisfactory advancement.

PRICES, STATISTICS OF. Preliminary to any discussion of the trend of prices during the year 1937, some consideration must be given to the changes which took place in the 13 preceding years. The year 1924 is generally regarded as a satisfactory starting-point for the real post-war period, 1919–24 being reckoned as a period of adjustment during which the economic machinery of the world was submitted to extensive overhauls for repairs and renewals.

The following table shows the course of prices in some of of more important countries.

INDEX NUMBERS OF WHOLESALE PRICES OF 40 BASIC COMMODITIES IN CURRENCY (1910–14 = 100)

(*From Warren and Pearson, 'World Prices and the Building Industry, 1937'*)

	United States	Great Britain	Netherlands	France	Australia	Germany	Sweden
1924	149	171	151	507	167	133	145
1925	161	161	151	563	159	141	147
1926	150	150	137	721	158	132	132
1927	143	142	133	627	161	133	129
1928	144	138	133	630	158	132	131
1929	141	135	129	627	160	129	126
1930	118	115	107	542	146	117	112
1931	89	96	84	460	129	101	95
1932	74	93	65	405	126	87	91
1933	82	92	63	390	123	85	90
1934	101	96	67	363	120	90	98
1935	111	97	66	333	123	93	104
1936	118	104	72	403	130	97	109

The six years 1924–29 witnessed a fairly considerable expansion in demand for raw materials and foods. The organization of production was more than sufficient for this expansion, and the tendency of prices was downwards. During this period in Great Britain, there was a great deal of unemployment; the number of insured workpeople recorded as unemployed monthly never fell below the million mark in 1929, and opinion at the time inclined to the view that the country was going through the slow process of recovery from the post-war slump. It was only later, when the experience of the conditions of 1930 and 1931 were available for comparison, that recognition came of the comparative boom-like conditions of 1928 and 1929.

With the general falling-off in 1930 of demand for basic commodities, the catastrophic decline in prices set in, accelerated by the size of accumulated stocks. This very sudden drop to pre-war levels and below, shown in the table, was regarded with great concern in producing countries. In the autumn of 1931, the gold standard was suspended in London; in the spring of 1933, it was suspended in the United States. Demand began to increase again in 1932–33. Nearly all basic commodities are now subject to some kind of control of output. By 1936, the demand for commodities and foodstuffs had reached a high level, and the consequent rise in prices was beginning to attract attention. Suggestions were made that perhaps prices were rising too quickly. The price of wheat in the United States was just about double what it was in 1932; rubber at 3*d*. per lb. in England in 1931 was 7¾*d*. per lb. in 1936. Old stocks were becoming exhausted, and the way was free for a boom in prices.

Great Britain: Commodity Prices.—In Great Britain, the course of prices is well indicated by the Board of Trade index number of wholesale prices. The indices for the years 1931–36, and monthly for the year 1937, are shown in the following table, where distinction is made between three classes of commodities.

BOARD OF TRADE WHOLESALE PRICE INDEX OF INDUSTRIAL MATERIALS (EXCLUDING FUEL)

(1930 = 100)

	Basic Materials	Intermediate Products	Manufactured Articles
1931 .	86·6	86·5	93·6
1932 .	70·7	83·7	92·7
1933 .	80·2	84·6	93·5
1934 .	88·0	86·9	94·8
1935 .	88·3	87·6	94·9
1936 .	98·9	93·2	98·2
1937 .	122·9	108·9	111·4
Months			
1 .	116·7	103·3	102·2
2 .	120·9	104·3	103·2
3 .	129·2	107·0	106·5
4 .	132·2	107·5	108·4
5 .	131·6	110·9	113·6
6 .	129·4	110·7	114·4
7 .	128·5	113·1	115·2
8 .	128·5	112·4	115·4
9 .	125·5	111·6	115·3
10 .	118·8	110·1	115·0
11 .	110·4	108·6	114·4
12 .	106·9	107·7	114·1

In the spring of 1937, concern was felt on account of the high level to which the basic materials index had risen. The figure of 132·2 for April represented a rise of 34 per cent. above the 1936 average. This was too rapid a rise for the economic machine to sustain with comfort. Particular attention was drawn to the non-ferrous metal group. In March, copper was £76 per ton, having averaged about £43 per ton during 1936. Tin at £287 per ton compared with £207 per ton in 1936. Lead was £35 per ton compared with £20 per ton in 1936, and zinc at £36 per ton was more than twice as expensive, having averaged £16½ per ton during 1936. Rubber also had increased to 11·86*d*. per lb., compared with 7·75*d*. in 1936. Since the spring, the basic materials index has shown just as considerable a decline. The prices of individual commodities quoted above are back again at figures under the 1936 level. At Dec. 31, 1937, copper was £39½ per ton, tin was £182 per ton, lead was £15½ per ton, zinc was £15 per ton, and rubber was 7*d*. per lb.

The consequent rises in the indices for intermediate products and manufactured articles were not so pronounced as that for basic materials, including as they do the more rigid cost of labour and overheads. The index for intermediate products was highest in July at 113·1, a rise of 21 per cent. over the average of 1936, while that for manufactured articles was highest in August at 115·4, a rise of 17½ per cent. over the general level of 1936. Since these highest figures, the tendency has been downwards.

Commodity Groups: Materials.—The changes in the wholesale prices of the various commodity groups during 1937 are shown in the following table:

Board of Trade Wholesale Price Indices by Commodity Groups: Materials
(1930 = 100)

	Coal	Iron and Steel	Non-ferrous Metals	Cotton	Wool	Other Textiles	Chemicals and Oils	Miscellaneous	All Materials
1936	107·6	106·6	93·0	88·8	105·1	72·6	93·5	92·3	95·7
1937	124·9	129·6	117·4	97·7	127·5	76·3	99·4	110·2	112·0
Months									
1	112·7	112·0	113·2	97·3	129·4	75·9	99·5	101·8	104·6
2	117·7	112·6	121·1	99·6	127·3	75·9	99·5	105·9	106·5
3	123·0	115·4	142·9	107·0	129·9	76·9	100·5	110·1	110·7
4	126·0	118·3	129·8	109·1	136·1	78·1	100·7	113·1	112·5
5	125·0	131·4	123·4	106·7	136·5	78·3	100·1	113·8	115·4
6	126·8	133·3	121·0	104·4	133·7	77·6	99·8	113·6	115·3
7	125·4	137·6	123·1	101·3	133·4	77·7	100·0	113·3	116·1
8	125·3	138·6	123·8	95·3	135·5	77·1	99·9	113·4	115·9
9	128·7	139·1	118·4	91·8	131·0	76·6	99·0	113·7	115·2
10	130·1	140·5	105·8	88·4	120·5	75·5	99·1	112·0	113·2
11	129·2	141·4	98·0	87·3	111·3	73·8	97·7	107·5	110·4
12	130·4	141·0	96·1	87·5	109·2	71·9	97·6	104·8	109·2

The general level of prices of materials rose from 95·7 in 1936 to a maximum of 116·1 in July 1937, a rise of 21 per cent., and since that time there has been a decline to practically the same level as at the end of 1936. Coal prices have been well maintained throughout the year owing to the greater demand. Considerable changes have taken place in the iron and steel index, which shows a rise throughout the year, due partly to the rearmament programme. Pig-iron prices, which had averaged 73*s*. per ton for Cleveland No. 3 in 1936, were kept at 81*s*. during the first six months of 1937, and were subsequently advanced to 101*s*. in July, and later to 106*s*. per ton in November. The index for the cotton group moved up to 109·1 in April, and has declined subsequently to 87·3 in November. The wool index was at a maximum of 136·5 in May and has since declined greatly.

Commodity Groups: Foodstuffs.

Board of Trade Wholesale Price Indices by Commodity Groups: Foodstuffs
(1930 = 100)

	Cereals	Meat, Fish, and Eggs	Other Food and Tobacco	All Food	Total Index, Food and Materials
1936	99·1	81·1	94·8	91·7	94·4
1937	127·0	86·4	98·7	102·2	108·7
Months					
1	123·1	82·2	97·8	99·4	102·9
2	121·6	81·9	96·9	98·6	103·9
3	124·1	83·0	99·5	100·7	107·3
4	129·5	84·0	98·9	102·0	109·0
5	126·3	86·4	98·1	101·8	110·7
6	122·3	85·8	100·5	101·6	110·6
7	126·8	87·3	99·5	102·9	111·5
8	128·0	89·2	97·2	102·8	111·4
9	128·6	90·4	98·0	103·7	111·2
10	133·1	88·6	100·7	105·3	110·6
11	130·7	87·9	100·9	104·5	108·5
12	130·6	91·2	97·9	104·4	107·6

The general level of food prices during 1937 was higher than in 1936, though the increases recorded have not been as spectacular as those of materials, the maximum figure in October of 105·3 being 15 per cent. above the 1936 level. The higher level is mainly accounted for by the substantial rise in cereal prices. These have been 20–30 per cent. above the 1936 level throughout the year. The meat figures have shown a fairly steady increase during the year, the general level being some 6 per cent. above that for 1936. The other food and tobacco figure shows a rise for the year of about 4 per cent. above 1936. An interesting fact to be noted is that, whereas the year 1937 as a whole shows very little change as compared with 1930, the base year of the index, the cereal figure has increased considerably, some 25–30 per cent., while the meat figure has declined by more than 10 per cent., the other figures being very little changed as regards general level. The substantial rise in cereal prices in the past few years will have repercussions in the cost of living index.

In the last column of the table above, there is shown the wholesale price index for all commodities and foods. This, of course, shows that prices on the whole have been throughout 1937 at a higher level than in 1936, but that a maximum was reached in July 1937, since when the general level has declined. The changes noted here are more than can reasonably be accounted for by seasonal movements.

Agricultural Prices.—The Ministry of Agriculture prepares monthly index numbers of prices of agricultural produce and of prices of feeding stuffs and fertilizers. These indices for 1936 and 1937 are set out below.

Agricultural Index Numbers
(1911–13 = 100)

Month	Prices of Produce		Prices of Feeding Stuffs		Prices of Fertilizers	
	1936	1937	1936	1937	1936	1937
1 .	119	130	84	119	89	91
2 .	118	129	83	115	89	91
3 .	116	130	85	118	88	91
4 .	123	140	86	124	88	91
5 .	115	133	85	119	88	91
6 .	116	131	87	119	89	91
7 .	117	131	93	122	89	91
8 .	119	133	105	119	88	92
9 .	127	137	99	114	87	92
10 .	125	131	101	120	87	92
11 .	125	133	101	120	89	92
12 .	126	132	111	121	89	92
Year .	120½	132½	93	119	88	91½

There has been little change in the average prices of fertilizers, an increase of about 4 per cent. from 1936 to 1937. But prices of feeding stuffs for animals have increased considerably, by about 20 per cent. The general level of prices of produce of agriculture has increased by about 10 per cent. Part of the rise in prices of foodstuffs previously observed is thus accounted for by the rise in prices of feeding stuffs for animals.

Retail Prices and Cost of Living.—During 1937, the Ministry of Labour cost of living index increased from 51 in January to 60 in December, each figure representing a percentage increase above July 1914. The index had fallen to the record low post-war figure of 40 in 1933, and from that year had been slowly rising to 47 in 1936. The average figure for 1937 is 54, thus there has been a rapid rise of 7 points from 1936 to 1937, compared with the slower rise of 7 points from 1933 to 1936. This acceleration in the rate of increase of this figure is mainly accounted for by the rapid rise in food prices (retail) between 1936 and 1937. The index for food alone was 20 per cent. above 1914 in 1933, the year of lowest prices, and had increased gradually to 30 in 1936, but from that level it jumped to 39 in 1937. During the year, the only other constituent of the cost of living index to show a rise comparable with that of food was the index for clothing, which was taken as 'between 90 and 95' in January, and 'about 110' in December, both these figures again representing increases above July 1914. The detailed figures for each month of 1937 are given in the following table:

1937. Cost of Living (Ministry of Labour)
Percentage Increase above July 1914

Month	Food	Rent	Clothing	Fuel	Miscellaneous	All
1 .	36	59	90–95	75–80	70	51
2 .	35	59	95	75–80	70–75	51
3 .	35	59	95	75–80	70–75	51
4 .	35	59	95–100	75–80	70–75	51
5 .	36	59	100	75–80	70–75	52
6 .	36	59	100–105	75	75	52
7 .	40	59	105	75	75	55
8 .	40	59	105	75	75	55
9 .	40	59	105	75–80	75	55
10 .	43	59	105–110	80	75	58
11 .	46	59	110	80	75	60
12 .	46	59	110	80–85	75	60

The rent figure was taken as the same during the whole of the year. The fuel figure shows a slight increase on the year, besides giving evidence of the difference between summer and winter prices of coal. The miscellaneous group (cleaning materials, fares, etc.) also shows a slight rise.

The rise in prices of crude foodstuffs, welcome to the producer, brings in its train a rise in retail prices very unwelcome to the consumer. A rise of 7 per cent. in food prices in a year (from 130 to 139) means an increase of about 2*s.* 6*d.* in a 35*s.* weekly food budget, and 2*s.* 6*d.* is a substantial proportion of the surplus remaining to a weekly wage of £3 after providing food, house room, warmth, and clothing for a family. During 1937 the wage index of the London and Cambridge Economic Service rose to 100½ from 97½ in 1936, having been 94 in 1933 (1924 = 100). Thus to compensate for a rise of about 7 per cent. in food prices from 1936 to 1937, there was a rise in the wage index of about 3 per cent. The rise in the cost of living index from 1936 to 1937 was about 5 per cent. (from 147 to 154).

In the table below, the average increases above the pre-war level are given for individual food items for the years 1933 (the period of lowest prices) and 1937.

Percentage Increases over July 1914 *for Items of Food*

	1933	1937	Percentage Increase 1937 on 1933
Beef (British)	27	27	0
Beef (Chilled or Frozen) .	9	13	4
Mutton (British) . .	26	37	9
Mutton (Frozen) . .	13	23	9
Bacon	3	32	29
Fish	98	103	3
Flour	15	51	32
Bread	28	62	26
Tea	16	41	21
Sugar (Granulated) . .	15	23	7
Milk	66	84	11
Butter	−7	6	14
Cheese	8	18	9
Margarine	−13	−10	3
Eggs (Fresh) . . .	32	47	12
Potatoes	13	58	40

[The negative signs for butter and margarine indicate decreases.]

Compared with pre-war days, there have been very different changes in the relative prices at retail of various foods. In 1937, the rises in price of imported beef, imported mutton, sugar, butter, cheese, and margarine were all less than 25 per cent. On the other hand, fish was double the 1914 price, milk has increased by 84 per cent., bread by 62 per cent., and potatoes by 58 per cent. Compared with four years ago, meat, fish, sugar, cheese, and margarine have increased by less than 10 per cent., but bacon has gone up by 29 per cent., flour by 32 per cent., bread by 26 per cent., tea by 21 per cent., and potatoes by 40 per cent.

Some idea of the effects of the recent rises in food prices may be gleaned from a study of the figures supplied by the Bank of England relating to the value of retail sales. In the table below there are shown for each month of 1937, comparisons with the corresponding periods of 1936, of the value of retail sales of food and perishables for Great Britain, together with the indices of retail food prices, from the cost of living index, and figures derived therefrom.

Month	Retail Sales of Food, 1937/1936	Food Price Index			Volume Index 1937/1936
		1937	1936	1937/1936	
1 .	103·5	136	131	104	100
2 .	106·5	135	130	104	103
3 .	116·4	135	129	105	111
4 .	100·8	135	126	107	94
5 .	120·0	136	125	109	110
6 .	104·5	136	126	108	97
7 .	110·2	140	129	108	102
8 .	108·3	140	129	108	100
9 .	108·8	140	131	107	102
10 .	108·9	143	132	108	101
11 .	109·0	146	136	107	102
12 .	110·0	146	136	107	102

In the first column of this table there are given figures showing the relation between the values of retail sales of food and perishables in Great Britain, each month being compared with the corresponding month of the year before. Some of these figures are unusually large; the March and May figures, for example, exhibit this peculiarity, first because Easter in 1937 occurred in March, and in 1936 in April, and second, on account of the coronation in May of 1937. The fourth column gives similar figures for food prices at retail. In the fifth column, headed 'Volume Index', is shown the result of dividing the figures in the first column by the corresponding figures of the fourth column. In this way we eliminate from the first column the influence due to changes in the price level, and thus we obtain figures indicative of volume of sales.

On the average, the index of volume of retail sales of food for 1937 compared with 1936 appears to be 102. We may therefore reasonably assert with some confidence that the total volume of retail sales of food in Great Britain has increased from 1936 to 1937 by about 2 per cent. But, according to the Ministry of Labour's estimates of the amount of employment amongst insured workers, it would appear that the total volume of potential consumers has increased between 1936 and 1937 by about 5½ per cent. (from about 10·9 millions to about 11·5 millions). These figures certainly suggest that the consumption per head on the average has declined from 1936 to 1937, and are in accord with the figures previously given where a comparison was made between the rise in the food price index and that of wages.

U.S.A.: Food Prices, Wholesale.—In recent years, the general trend of wholesale prices of foods was upwards from 1933 to 1935, 1936 was a year of slight recession, and in 1937 the general level was higher than in 1936 and 1935. But in the last quarter of 1937, there was a comparatively rapid fall. Whereas in 1936 the index of the Department of Labor rose from 83·3 in September to 85·5 in December, in 1937 the index fell from 88·0 in September to 79·8 in December. In the table below, the price indices for foods are given in detail.

Department of Labor Index of Wholesale Prices
(1926 = 100)

	Foods	Dairy Products	Cereal Products	Fruits and Vegetables	Meats	Other Foods
1931	74·6	81·8	73·1	72·4	75·4	69·8
1932	61·0	61·3	66·4	58·0	58·2	60·7
1933	60·5	60·7	75·0	61·7	50·0	61·1
1934	70·5	72·7	88·7	67·5	62·9	66·6
1935	83·7	79·8	94·1	63·6	94·5	77·7
1936	82·1	83·9	86·2	71·9	87·8	75·9
1937	85·5	93·1	87·6	74·2	99·0	75·6
Months						
1	87·1	88·9	88·1	82·4	90·6	82·1
2	87·0	88·7	89·3	87·8	90·3	78·8
3	87·5	90·2	90·1	86·5	92·0	78·2
4	85·5	78·5	89·8	83·5	94·9	77·0
5	84·2	73·1	88·7	84·1	95·9	75·2
6	84·7	72·0	90·4	84·5	98·0	74·3
7	86·2	76·4	92·3	71·2	106·0	74·6
8	86·7	79·7	87·9	65·3	112·1	73·6
9	88·0	84·8	86·1	64·0	113·4	75·5
10	85·5	85·7	84·6	62·2	107·4	73·4
11	83·1	89·2	81·5	61·5	98·3	73·6
12	79·8	90·2	82·0	57·8	88·8	71·5

The higher level in 1937 of the food index is mainly attributable to the very high level reached by the meat index, which stood at 113·4 in September, having risen to that level from the beginning of the year. Since September, the meat index has receded to a figure of the same order as those for the earlier months. The average figure for dairy products in 1937 was lower than in 1936, while that for cereals was somewhat higher, and this was also the case for fruits and vegetables. In this case, the movement of the index during the year was very different from that in 1936. In 1937, the general level was fairly steady at about 85, for the first six months, after which came a sudden drop to a level of 60 at the end of the year. In 1936, on the other hand, the index rose sharply from 62 in January and February to 82 in June, after which it fell to 72 in September, and then rose to 75 in December.

U.S.A. Food Prices: Retail.—The general trend of retail prices indicated by the Department of Labor index of retail costs of food has been upward since 1933. The figure for 1936 was 82·1, that for 1937 was 85·0. Since Sept. 1937, there has been a rather sharp falling off from 85·8 to 82·6 in December. The index was higher for each month than for the corresponding period of 1936 up to November, but the December figure was lower than that for December 1936. *See* table above for detailed figures.

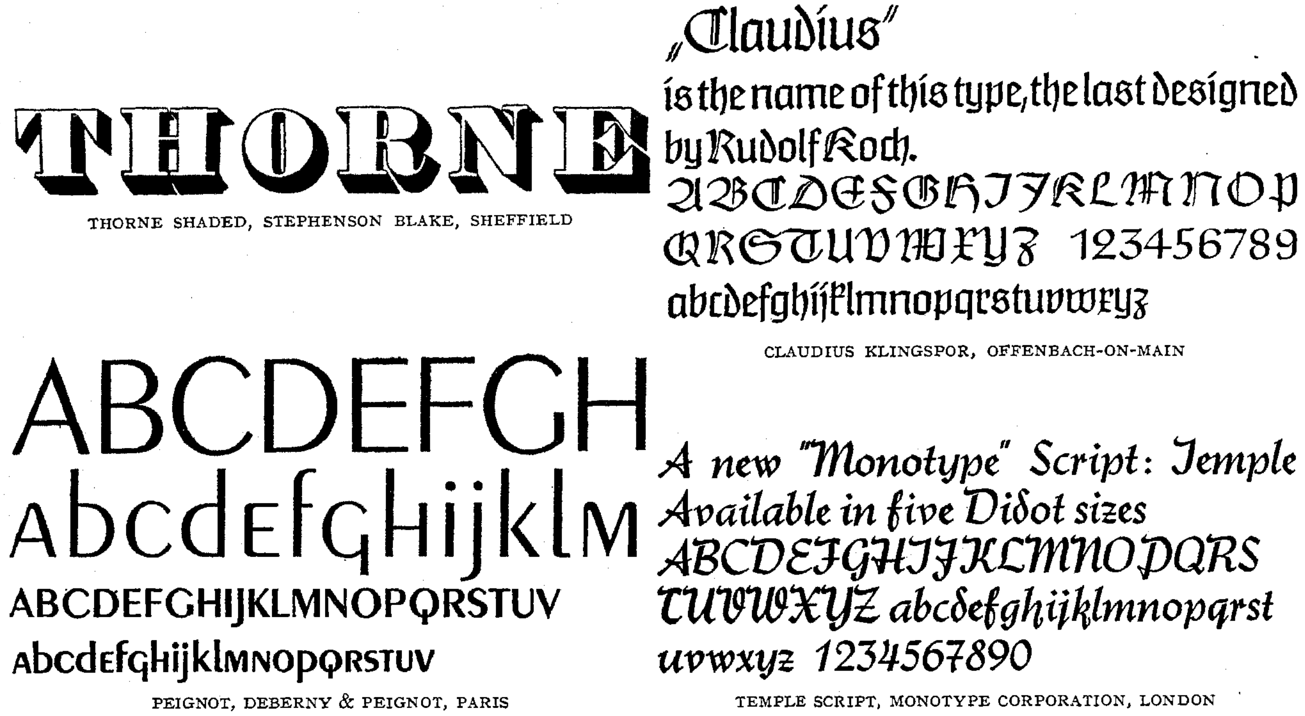
Department of Labor Index of Retail Costs of Food
(1923–25 = 100)

	All Food	Cereals and Bakery Products	Meats	Dairy Products	Eggs	Fruits and Vegetables	Beverages and Chocolates	Fats and Oils	Sugar and Sweets
1931	82·1	83·5	96·4	80·8	67·2	73·3	83·2	70·4	64·7
1932	68·3	75·5	75·5	66·7	57·9	60·4	75·1	52·0	58·4
1933	66·4	77·4	65·7	65·2	55·3	65·8	68·4	48·6	61·5
1934	74·1	91·0	75·0	71·2	62·4	69·8	71·7	55·4	63·8
1935	80·4	92·9	96·1	76·7	73·5	60·6	70·3	81·5	65·0
1936	82·1	91·7	94·7	80·2	72·7	69·7	67·5	75·6	64·4
1937	85·1	94·3	102·1	83·2	71·5	69·6	69·8	78·4	66·0
Months									
1	84·6	92·4	95·7	83·4	76·3	74·4	68·6	79·6	64·8
2	84·5	92·6	94·3	83·0	65·0	78·2	68·9	80·1	65·6
3	85·4	92·9	95·4	83·6	64·3	80·5	69·3	80·3	65·6
4	85·6	93·8	97·7	81·6	64·7	80·0	69·6	80·2	66·0
5	86·5	95·2	99·7	80·1	61·8	83·1	69·7	78·9	66·1
6	86·2	95·4	102·1	79·8	62·5	79·0	70·0	79·5	65·7
7	85·9	95·7	107·8	80·9	68·0	69·0	70·4	79·5	65·1
8	85·5	95·6	111·6	81·9	71·9	61·0	70·7	79·9	64·8
9	85·8	95·1	111·4	83·9	79·0	59·2	70·4	78·4	66·5
10	84·9	94·7	108·8	85·1	81·6	56·5	70·3	77·5	67·4
11	83·6	94·0	102·8	86·6	84·9	56·2	70·1	74·8	67·1
12	82·6	93·7	98·0	88·2	78·0	58·4	69·4	72·0	66·8

The meats index shows the same kind of movements during the year as was noted with the wholesale price index. It rose from 95 at the beginning to 111·6 in August and 111·4 in September, since when it has shown a fairly rapid decline. The cereals figure has moved little, but it has been, apart from the month of January, above the 1936 level. The dairy figure again follows the movements in the wholesale index, but not with such amplitude, and the general level has been above that of 1936. The fruits and vegetables index has moved during 1937 in a similar fashion to the wholesale index, being high in the first half of the year, and then declining to a much lower level towards the end of the year. The average for 1937 is not substantially different from that of 1936. Of the other constituents of the index, that for eggs follows much the same course as in 1936, and the general level is hardly changed. The index for beverages and chocolates has changed little, but has been consistently above the figure for 1936 by about 3 points. Similarly, the movements in the series for fats and oils, and sugar and sweets, have been slight during 1937, and the general average in each case is above that for 1936. (E. C. Rh.)

PRINCE EDWARD ISLAND, the smallest yet the most populous and fertile of the nine Canadian provinces, lies to the south of the Gulf of St. Lawrence. It is crescent in shape; length 137 miles, width varying from 3 to 32 miles, area 2,133sq.m., divided into farms of 100 acres each, all owned by the occupiers. Population: (1931) 88,038; estimated for Jan. 1, 1938, 93,000, of which 81 per cent. were rural; 80 per cent. of British descent; 14 per cent. French; 41 per cent. Roman Catholics; 17 per cent. Presbyterians; 28 per cent. United Church; 6 per cent. Anglicans. Capital, Charlottetown (12,361). The government is constitutional, but the House of Assembly is of one mind; there are no parties. It is the last refuge of prohibition. Lieut.-Governor De Blois, Premier Thane A. Campbell, and Chief Justice Mathieson are the principal officers. Education, as on June 30, 1937, absorbed $543,109 for 18,183 enrolled pupils, with average attendance of 72 per cent.; cost per pupil, $38.30; teachers, 657; average salary, $531. The Prince of Wales College has 504 students.

To Dec. 30, 1937, the official estimate of the revenue was $1,799,816; the expenditure $1,863,104, of which interest absorbed $277,000, sinking fund $154,000, roads $220,000. The public debt at the same date was $5,437,268, *per capita* $58; the yearly tax, $20 for Provincial expenditure. There is a moderate income and succession tax. The Dominion subsidy was $647,181. Agriculture, the principal occupation, yielded in 1937: potatoes, 5½ million bushels, 150 per acre; turnips, 4½ millions; oats, 4½ millions; wheat, 314,000; hay and clover, 377,000 tons. To Sept. 30 only, the yield of butter was 1,764,309lb.; of cheese, 426,648. The returns for 1937 by Nov. 1 disclosed fisheries at $683,157; oysters, 861,800lb.; fox pelts, estimated, 70,000 to yield $2 millions. The net value of agricultural production, $11,725,908, varies little from year to year. (A. Mac.)



THORNE

THORNE SHADED, STEPHENSON BLAKE, SHEFFIELD

„Claudius"
is the name of this type, the last designed by Rudolf Koch.
ABCDEFGHIJKLMNOP
QRSTUVWXYZ 123456789
abcdefghijklmnopqrstuvwxyz

CLAUDIUS KLINGSPOR, OFFENBACH-ON-MAIN

ABCDEFGH
abcdefghijklm
ABCDEFGHIJKLMNOPQRSTUV
abcdefghijklmnopqrstuv

PEIGNOT, DEBERNY & PEIGNOT, PARIS

A new "Monotype" Script: Temple
Available in five Didot sizes
ABCDEFGHIJKLMNOPQRS
TUVWXYZ abcdefghijklmnopqrst
uvwxyz 1234567890

TEMPLE SCRIPT, MONOTYPE CORPORATION, LONDON

Penrose Annual, 1938]

SPECIMEN LINES OF DISPLAY TYPES PRODUCED BY ENGLISH, FRENCH, AND GERMAN TYPE FOUNDERS DURING THE YEAR

PRINCIPE : *see* PORTUGUESE GUINEA.

PRINTING. The recent economic depression has brought wide recognition of the necessity for subjecting all factors entering into the production of printed matter to the test-tube analysis of the laboratory. Manufacturers of machinery and equipment have made their contributions through improvements leading to greater speed, ease, and convenience of operation. Scientific research has added new materials of great present value and future possibilities, and the whole trend has been towards shortening the time between the completion of written manuscript or copy and its appearance in printed form.

One contribution of science was the introduction for use on a web machine for long runs, just prior to the opening of the year 1937, of what is known as ' Vaporin ', which permits the instantaneous drying of inks, the ink vehicle being instantly vaporized by the application of heat, leaving a relatively dry ink film on the surface of the paper. Paper can be sent through the press at greater speed, and the printed sheet can be handled in much less time after it leaves the press.

The new enclosed ink fountain, known as the ' Weiss Speedry Fountain ', has increased the production of colour gravure presses from about 400ft. a minute to from 1,200 to 1,500ft. a minute, with possibilities for further speed increases and other advantages in production.

Another contribution to the printing field made by chemists is ' Neoprene ', a rubber-like material used to replace the composition or rubber printing rollers, and having increased wearing qualities as well as greater resistance to the vehicles used in inks and the various types of washes. And a substitute for rubber, called ' Buna ', used for printing rollers and blankets, and said to be 30 per cent. stronger than rubber, was also announced during the year.

Experiments in the field of colour brought out the ' Monastral Fast Blue BS ', a new insoluble pigment yielding strikingly brilliant shades of blue, and having resistance to most of the severe colour-destroying agencies. First used for printing inks, the colour has been said to meet all the requirements of fine process printing, as it is strong and fast, and is outstanding in reproductive quality and beauty. The search for other colour pigments has also been carried on and given greater impetus.

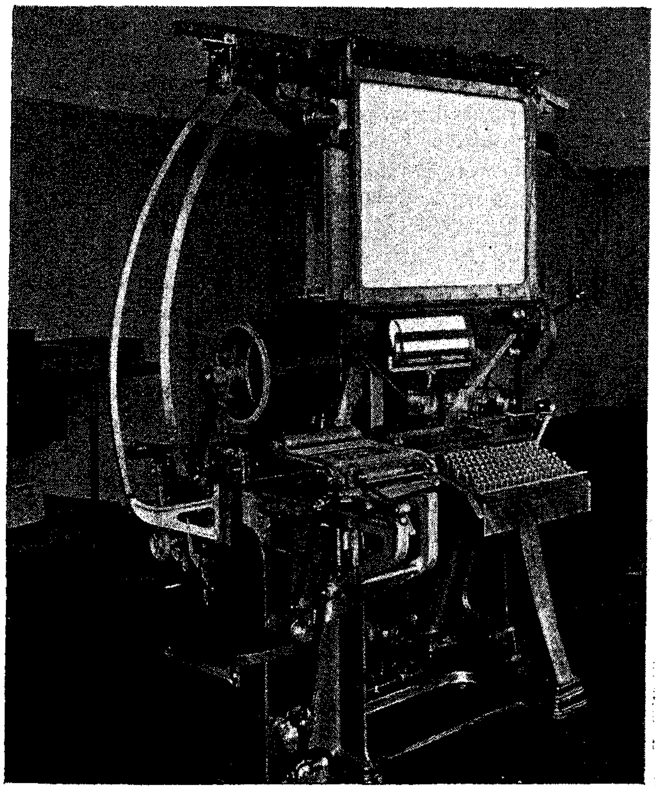
Impetus has been given to the standardization of colours through the announcement of an international colour code which ensures uniformity of colours and their varying shades, the code describing and explaining 720 colours and shades, and being designed to eliminate the confusion that has existed between scientists and industrialists of different countries on account of the impossibility of accurately defining various shades of colours. The introduction of commercial models of the ' Spectrophotometer ', a photo-electric recording device which removes the human element from colour analysis because its action is entirely mechanical and automatic, has also advanced the work of colour matching and standardization, classifying any shade of colour, no matter how delicate.

The advance in colour science and its applications to the field of printing is also indicated by the fact that colour samples, or ' Colograms ', as they are called, were sent by telegraph from one city to another with the aid of the recording photo-electric spectrophotometer, and the new telegraphic facsimile service. The characteristics of the colour are charted by the spectrophotometer on a graph, a copy of the graph being transmitted by means of the facsimile service, thus enabling scientifically accurate colour specifications to be telegraphed in a few minutes to printers, advertisers, or others requiring colour analysis in a hurry. Great progress has been made during the year in the development of colour printing in daily newspapers. The advance in colour photography, and the corresponding advance in the reproduction of colour photographs by photo-engraving, has brought great progress in the use of direct colour photography for illustrating printed matter.

Impetus has been given to the work of accurately determining the visibility and legibility of printing and printing types, the introduction of the visibility meter having made possible a more scientific method of making tests. The problem of producing straight type matter or reading or text matter for offset lithography and gravure printing has been attacked more vigorously, efforts being continued to develop means by which the photographing of proofs of the type, or transferring them, could be eliminated. The outstanding effort along these lines probably is the continued development of the machine known as the 'Orotype', the operation of which is similar to that of an ordinary type-composing machine, but which incorporates the use of a printing mechanism by means of which the type is printed, line by line as it is set on the machine, on to a 'Cellophane' film. The first impression from the type is made on a rubber blanket, after which the film is brought into position and pressed against the blanket by the type, thus giving the printed impression on both sides of the film and producing a type film, which offers a more direct method of transferring the type matter.

Renewed activity has taken place in the efforts to develop self-aligning or variable-spacing typewriters, by means of which typewritten matter can be properly aligned at both left- and right-hand sides, permitting of photographing direct from the typewritten copy and thus eliminating the setting of type. Several such typewriters have been developed, and through their use several newspapers printed on the offset press have made their appearance during the year 1937.

Experiments are being made with the use of regular type faces to take the place of the typewriter faces. Greatly increased interest has been taken in printing from rubber plates. Likewise there has been a noteworthy increase in the use of coating processes, such as varnishing, lacquering, and cellulose finishing after the sheets are printed, the gloss finish given greatly enhancing the brilliance of colours as well as the varying shades and tones in illustrations. The cutting of matrices for another oriental type face, the Tamil, is indicative of the steady progress being made towards increasing the use of printing in greater quantities the world over. (J. L. F.)



Penrose Annual]

THE OROTYPE MACHINE FOR LEADLESS COMPOSITION, MANUFACTURED BY THE SWISS LOCOMOTIVE AND MACHINE WORKS, WINTERTHUR

PRISONS: *see* PENAL SYSTEM.

PROFITS TAX: *see* NATIONAL DEFENCE CONTRIBUTION.

PROTEINS: *see* BIOCHEMISTRY.

PROTESTANT CHURCHES IN THE BRITISH EMPIRE. The centenary of the birth of D. L. Moody was commemorated on Feb. 5 by a meeting (5,000 people present) at the Albert Hall, London. Among the speakers were the Bishop of Norwich, Prebendary Carlile, and the Rt. Hon. Sir Thomas Inskip, C.B.E., M.P., Chancellor of Truro Diocese.

The statistics of many of the smaller religious denominations indicate a decline in membership in much the same proportion as the losses sustained by the main Protestant denominations, for which *see* separate headings.

The Free Church of England (Reformed Episcopal) has about 50 churches in England and a membership of 12,836, with 8,820 names on its Sunday School registers. According to the latest returns, there is little change.

The Countess of Huntingdon's Connexion, affiliated in some of its branches to the Congregational Union, has 38 places of worship, and no change is reported in its very small membership.

The Wesleyan Reform Union, often referred to as the **Free Methodist Church,** which follows the doctrines of John Wesley with the Congregational form of organization, has 13,239 members and 21,350 Sunday School pupils, a decline of 144 and 1,969 respectively. Religious centres of this denomination are found more in the north of England than in southern counties.

The Brethren (formerly 'Plymouth Brethren') are divided into two sections, one known as the 'open body'. This sect has a membership of about 80,000.

Independent Methodists number about 10,000 adherents and have some 22,000 Sunday School pupils. The body is represented both in Great Britain and Ireland.

Within the British province of **The Moravian Church** has a membership of 3,641 with 3,254 communicants. It has 40 places of worship.

The Catholic Apostolic Church has some 80 centres of effort and places of worship in the United Kingdom.

For **The Calvinistic Methodist Church of Wales,** *see* PRESBYTERIAN CHURCHES.

PROTESTANT EPISCOPAL CHURCH. In the record of this church in the United States for 1937 two things are especially noteworthy: the general participation of the clergy and laity in the Forward Movement undertaken with the object of stirring and strengthening the faith and spiritual life of the church; and its earnest efforts, in spite of the unfavourable financial conditions, for the maintenance of the church's missionary work at home and abroad.

In Oct. 1937, the Triennial Meeting of the General Convention was held in Cincinnati, Ohio. The most important action at this convention was the reorganization of the National Council of the church and the election of the Right Reverend Henry St. George Tucker, bishop of Virginia, to the office of presiding bishop. The subject which attracted the greatest attention was a proposal that the bishops should be given power to authorize the clergy to remarry persons divorced by a civil court, whatever might be the ground on which the divorce was obtained. This proposal was overwhelmingly rejected.

An event of great historic and religious interest was the observance in New York and Philadelphia of the 150th anniversary of the consecration in Lambeth Chapel, London, of the first bishop of New York, Samuel Provoost, and the first bishop of Pennsylvania, William White, which gave this American church the Episcopate in the Anglican line of succession. In August, representatives of the Protestant Episcopal Church participated in the Conference on Life and Work held at Oxford, and in the Conference on Faith and Order held in Edinburgh. As a result of these conferences a meeting is to be held in Holland in May 1938, to consider plans for the formation of a world council of churches. The General Convention in Cincinnati took action providing that representatives of the Episcopal Church shall attend the meeting in Holland and report upon these proposed plans at the next meeting of the General Convention. (*See* also ANGLICAN COMMUNION.)

(W. T. M.)

PRUSSIA : *see* GERMANY.

PSYCHIATRY. Advances in psychiatry in 1937 have largely been made in the field of experimental therapy. Sakel's insulin hypoglycemic shock treatment of schizophrenia, originally used by him in Vienna in 1933 and first reported in 1934, has been widely adopted in other clinics throughout the world. The results are promising and the association between insulin treatment and clinical improvement is occasionally very striking. Published statistics, however, must be regarded at present as tentative in view of the difficulties in the diagnosis of schizophrenia and the variability in spontaneous reactions which the disease often shows in response to physical and psychologic treatment, or no treatment at all. Although Sakel's method is violent and sometimes dangerous, one is justified in using it in such a serious disorder. Psychiatrists are unable to say that the favourable results, when obtained, are permanent. Transient improvements of a similar nature have been observed after the administration of high percentages of carbon dioxide and other forms of treatment used in the past. Another form of 'shock' treatment has been under investigation in 1937. Meduna of Budapest has used 'convulsive therapy' induced by rapid intravenous injections of metrazol, a drug similar in action to camphor, producing epileptiform seizures. It is claimed that after a period of confusion and somnolence the patient's mental condition is greatly improved. One or two reports from other investigators are favourable, but the treatment is too new to evaluate. Finally, the reports on the use of theelin in involutional melancholia, a disease of the climacteric, continue to be favourable, and recovery, when large doses are given, has occurred in upwards of 90 per cent. of patients with this affliction, the period of hospitalization at the same time being reduced by one-half.

Work has continued on the surgical treatment of the psychoses, as advocated by Moniz in 1936. Destruction of some of the numerous connecting fibres of the frontal lobes has led to amelioration of such symptoms as anxiety, apprehension, nervous tension, and insomnia. This radical method of treatment is still under investigation and has not been widely used. No conclusions. except great caution, are justified at present.

Another investigation during the year was the continued study of the action potentials of the brain with the recording of them by the electro-encephalogram. These researches have led to important conclusions regarding epilepsy, sleep, and cerebral localization of function. All investigators have found a spontaneous cerebral rhythm, which can be recorded as an electrical current from electrodes placed on the scalp. The normal rhythm, about 10 per second, reveals some inborn feature or pattern of cerebral activity, not understood at present. The electro-encephalograms appear to conform to the biological law of similarity of identical twins. In disease, certain wave changes are pathognomonic of petit mal, a form of epilepsy. Investigation of electro-encephalograms of patients with mental deficiency and psychoses reveals certain changes not yet interpreted. There are indications, however, that such studies may aid in the estimation of the severity of the psychosis and as a measure of therapeutic efficacy.

A most important field of research has not been neglected. With many modern forms of treatment now in use for a considerable period of time, thoughtful physicians are attempting to evaluate the results of their endeavours. Psycho-analysis, the most complicated therapeutic measure employed at present, is felt by most workers to be valuable in a selected group of patients suffering from the more severe forms of the minor psychoses. In general hospitals, where only modified psychotherapy can be used, about 60 per cent. of the patients are considered to be improved as the result of treatment in an established ambulatory psychiatric clinic. More than one-half of the patients with neuroses may be improved with something less than 'intensive psychotherapy' of the psycho-analytical type. Thus, the more simple methods of treatment are not to be discarded, in spite of the acknowledged value of psycho-analysis in certain cases.

In general, as diagnosis and classification of the psychoses become more fixed, research turns towards the therapeutic field. The work of 1937 is encouraging, for not only has much been accomplished, but new pathways of investigation have been opened, many of which appear to offer great promise. (*See* PHYSIOLOGY and PSYCHOLOGY.) (H. R. V.)

PSYCHICAL RESEARCH. Important developments in psychical research have taken place in both Europe and America during recent years. This is due primarily to the efforts which orthodox science is now making in the investigation of the abnormal faculties of the mind. Active groups of workers at such universities as Bonn, Duke, Johns Hopkins, Leiden, London, and Utrecht are producing results which augur well for the future.

Dr. J. B. Rhine's work on 'extra-sensory perception' (the newest term for telepathy, thought-transference, and clairvoyance) has stimulated those interested in abnormal psychology to repeat his experiments. Dr. Rhine and his colleagues at Duke discovered that certain of the students and others possessed the telepathic or clairvoyant faculty to a marked degree. Sets of cards, each bearing five different geometrical figures, were used, and the percipients were invited to 'guess' the designs on the shuffled, unseen cards. Nearly 100,000 tests were made, and the scores recorded exceeded any estimate based on chance. S. G. Soal, of London University, has duplicated Rhine's experiments, but not his results, the good 'guesses' not amounting to more than chance would account for. Dr. Hans Bender, of Bonn University, has been more successful. G. N. Tyrrell, R. H. Thouless, and others of the (British) S.P.R. have also concerned themselves with extra-sensory perception, though the whole subject is still too controversial to admit of any positive deductions.

In 1937 the mystery of fire-walking was solved. Two years previously, a young Indian named Kuda Bux demonstrated to the University of London Council for Psychical Investigation that he could walk barefoot on a fire-trench with a surface temperature of 430° C. without injury. These controlled experiments suggested that 'faith' was the secret of immunity. In April 1937, a long series of experiments was conducted by the same group with another professional fire-walker, Ahmed Hussain. By instrumental means it was learnt that no occult or psychic power is necessary in fire-walking, the secret of which is: (*a*) the short contact-time of each foot with the embers; (*b*) the low thermal conductivity of burnt or burning wood embers; (*c*) confidence in walking. A young Englishman, Reginald Adcock, walked over a fire with a surface temperature of 800° C. and was quite unhurt.

Another event of 1937 was the publishing of the report (the first of its kind) of the University of London Council on the 'telepathic' faculty of Marion, the vaudeville 'thought-reader'. It was discovered that his feats were due to unconscious hyperaesthesia of certain of the senses. Finally, spiritual healing is being practised still more extensively in Great Britain, and Milton Abbey, where the Rev. John Maillard conducts his mission, is to be enlarged.

BIBLIOGRAPHY.—J. B. Rhine, *Extra-Sensory Perception* (Boston, Mass., 1934); *Journal of Parapsychology* (Duke University, Durham, N.C., 1937); Harry Price, 'Last Words on the Fire-Walk' in the *Listener* (London, Aug. 11, 1937); S. G. Soal, 'Preliminary Studies of a Vaudeville Telepathist' [Marion report], *Bulletin III*, Univ. of Lon. Council for Psy. Investigation, 1937. (H. PE.)

PSYCHOLOGY. Under this heading are included both theoretical and applied psychology.

Theoretical.—The year 1937, while unmarked by any advance of new or startling theory, was for psychology largely a time of critical reconstruction and consolidation. Since the founding of the several so-called 'schools' towards the beginning of the present century, in which the most divergent views were advanced in respect of the principles, scope, and even the meaning of psychology, progress towards agreement appears to have been made; and those psychologists who are not strict partisans of any one of them have found that there are ways of harmonizing at least some of the doctrines that a short time ago seemed to be irreconcilable. In Great Britain interest continued to be mainly centred upon the determination and measurement of the factors that account for the performance of cognitive mental operations, and was increasingly directed towards the statistical study of character types. A new revision of the Stanford-Binet Tests of Intelligence, lately made in America by L. M. Terman and M. A. Merrill (*Measuring Intelligence: A Guide to the Administration of the New Revised Stanford-Binet Tests of Intelligence*, 1937), has been under process of adaptation for use in Great Britain; and a performance test, planned in accordance with Spearman's noegenetic principles, and devised by L. S. Penrose and J. C. Raven of the Royal Eastern Counties Institution ('A New Series of Perceptual Tests: Preliminary Contribution', *Brit. J. of Med. Psy.*, 1936), was applied on a large scale. This test can be administered to very young children and to the feeble-minded as well as to superior adults; and, among other purposes, it has been used to determine the incidence of mental heredity between parents and children.

An investigation into the relation between the intelligence of the children and the size of the family in industrial towns and rural areas was carried out by R. B. Cattell (*The Fight for our National Inheritance*, 1937). This pointed to an inverse relation between the number of the children and their intelligence level. Assuming that 3·6 children in every family are needed to keep the population constant, since only families of low intelligence (Intelligence Quotient, 60–80) are prolific enough to be perpetuated, the conclusion is drawn that within a generation mental deficiency will increase to the extent of 24 per cent., with a 35 per cent. decrease in gifted children (I.Q., 120 or more), unless conditions alter. This inverse correlation between intelligence and size of family was corroborated by E. J. Bradford ('The Relation of Intelligence to Varying Birth Rate in Different Social Grades', *Brit. J. of Educational Psy.*, 1937).

A considerable amount of research was devoted to the investigation of *perseveration*, which hitherto had presented several difficult problems and apparent discrepancies; and in September a Committee of the Psychological Section of the British Association for the Advancement of Science reported upon its work. This Committee was, and still is, engaged in examining and standardizing tests for the so-called 'p'-factor.

Differences in types of character and temperament have been a subject of theoretical and practical interest since the times of Hippocrates and Galen; but few scientific studies of them had been made. At most the distinctions drawn (introvert-extravert, schizothyme-cyclothyme, etc.) depended upon clinical and diagnostic impressions. An early attempt at scientific investigation of this problem was made by E. Webb ('Character and Intelligence', *Brit. J. of Psy.*, Monograph Supplement No. 3, 1915), who found that certain character qualities tend to accompany certain kinds of intelligence. More recently attempts to establish typological tests have been made, notably in Germany by N. Ach (*Analyse des Willens*, Berlin, 1935) and his colleagues, and in England by W. Stephenson. The data derived from the German work were not submitted to adequate statistical treatment; but in England the method of multiple factor analysis was used, together with Stephenson's 'inverted technique' procedure ('Correlating Persons Instead of Tests', *Character and Personality*, 1935), with considerable success in determining a number of type-factors. In 1937 these methods were used very widely by a large number of research workers with promising results.

The Ninth International Congress of Psychology was held at Paris, July 25–31, under the presidency of Pierre Janet.

An important movement within the British Psychological Society towards the recognition of the qualifications of psychologists was launched independently of, though on lines similar to those followed by, the American Association for Applied Psychology in its inauguration in 1937. The American Association provided for two classes of members: (1) Fellows, whose qualifications include the Ph.D. (or equivalent) and four years of practice (or published research of recognized value), and (2) Associates, Ph.D. (or equivalent), and one year of practice. The sections of the Association are: (1) Clinical, (2) Consulting, (3) Educational, and (4) Industrial and Business Psychology. Membership will be a guarantee to the public of the status of professional psychologists. The Council of the British Society drew up a scheme according to which there would be three grades of members: fellows, associates, and ordinary (honorary fellows to replace the old honorary members). Qualifications analogous to those of the Association would be required; and, so far as the Society could guarantee it, the public would thus be protected from exploitation by unqualified persons. The deliberations of the Council lasted throughout 1937; and their proposals are shortly to be laid before a general meeting of the society for ratification.

Applied.—Apart from the recognition of professional psychologists, which is of even more importance in the applied branches of the science than in the theoretical, considerable advance has been made in the application of psychological principles to practical problems. A research into fatigue and boredom in monotonous work was carried out, under the auspices of the Medical Research Council Industrial Health Research Board, by S. Wyatt and J. N. Langdon, assisted by F. G. L. Stock (*Fatigue and Boredom in Repetitive Work,* H.M. Stationery Office, Report No. 77, 1937), in which proneness to boredom and means for its alleviation were investigated. Among other conclusions it was found that rest pauses, talking, singing, and listening to gramophone music are effective antidotes to boredom.

The National Institute of Industrial Psychology devised and applied tests for the selection of sales managers as distinguished from salesmen. Continuing its studies on the working conditions in schools, W. Douglas Seymour of the Institute also investigated the effect of varying the colours of chalk and ' blackboard ' on the times taken for reading short syllables by adults, as well as the speed at which children (over 1,000) could copy a set passage written in white on black as compared with other combinations of colours. It was found that there was a gain of 15·4 per cent. in the reading, and 10 per cent. in the copying, when deep blue lettering on a yellow board was substituted for white on black (' An Experiment Showing the Superiority of a Light Coloured Blackboard ', *Brit. J. of Educational Psy.*, 1937 ; ' Improving the Blackboard ', *Nat. Inst. of Indust. Psy.*, Report 7, 1938).

Occupational testing was further explored in America by the Division of Standards and Research of the United States Public Employment Service. A large number of occupations were analysed with a view to finding the special and common factors required for success in each, in the expectation of discovering ' aptitude patterns ' (W. V. Brigham, *Aptitudes and Aptitude Testing,* 1937).

Accident proneness, particularly with regard to motor driving and aeroplane flying, has been the subject of much investigation. The United States Highway Research Board (*cf.* H. M. Johnson, ' Highway Accidents ', *Science,* 1937) examined the accidents of 30,000 drivers. Under 4 per cent. accounted for 39 per cent. of the fatal, 36 per cent. of the non-fatal personal accidents, and 38 per cent. of those in which there was no human injury. Tests for driving ability were explored. The incidence of accidents has been suggested as due to different causes : ' ability-capacity patterns ' (A. Lauer, ' Fact and Fancy Regarding Driver Testing Procedure,' *J. of Applied Psy.*, 1937) ; ' emotional imbalance ' or ' nerves ' (J. Lahy and S. Korngold, *Recherche expérimentale sur les causes des accidents du travail,* VIIIth Internat. Conf. Psychotechnique, 1935) ; ' general instability ' (G. Meyerhoffer, ' Unfallaffinität im Verkehrswesen ', *ibid.*). H. Brugger considers it a function of temperament (' Contributo alla psicologia degli infortuni automobilistici ', *Archiv. Ital. Psicol.*, 1936). The diversity of views, though there seems to be some common factor indicated by all, suggests the need for further inquiry.

The psychology of aviation has been intensively investigated, particularly in respect of tests for aviators and of the effects of oxygen deprivation in high altitudes. Results of the tests suggest that the ability required for successful aviation is (1) power of orientation in three dimensions (P. Metz, ' Functionale und characterologische Fragen der Fliegereignung ', *Zeit. f. angewandte Psy.*, 1936), and (2) those personality factors that are indicated by extraversion (O. F. McIlnay and W. S. Jensen, ' Value of Determining Reality Adjustment as a means of estimating Flying Aptitude ', *Mental Hygiene,* 1937). The results of oxygen deprivation were studied during mountain climbing (R. A McFarland, ' Psycho-physiological Studies at High Altitudes in the Andes ', *J. of Comp. Psy.*, 1937) and high flying, as well as in laboratory conditions ; and changes both in cognitive and temperamental factors due to variation in the oxygen content of the atmosphere were measured. The results show that there are considerable individual differences in resistance to the effects of high altitudes. (F. A.)

PSYCHOLOGY, PHYSIOLOGICAL. Progress in physiological psychology rarely provides clear-cut stepping-stones paralleling the discoveries of radio-activity, or heavy water, in the physical sciences, though like these it depends upon novel or revised principles of interpretation. A selection of recent contributions yields a perspective of problems and positions in contemporary psychology.

The relation between neural structure and mental function assumes a reconstructed phase in the recognition of a super-cortex directing the supreme functions. The primary cortical functions direct interpretation of sense-impressions and co-ordination of muscle-groups. A more complex hierarchical integration is required for the high-grade animal, and above all the anthropoid and human mental constructions. This is provided in the correlational fields, long ago recognized as ' silent ' areas of the cortex, as not responding to electrical excitations. There are such areas for visual, auditory, and somaesthetic functions by support of which intellectual operations proceed. The supreme integration is the function of the great frontal lobes, operating through the correlational fields.

This view summarizes approaches of recent date, and is confirmed by the studies of Penfield. In his technique, the patient (usually for removal of tumour) is conscious during the operation, and as one and another of his cortical areas is stimulated, the subject reports what he feels and his movements are noted. Over 100 subjects have been thus stimulated. In terms of actual contractions observable under stimulation, movements of the tongue, facial muscles, neck, jaw (opening and closing), swallowing, vocalization, as well as of trunk and legs, arms and shoulder, and most minutely of the hand and the separate fingers and thumb, have all been localized, together with a map of their spread and distribution. This is the first observation of a vocal sound under electric stimulation on a human subject. The sensory distribution reported as feelings follows a similar pattern, though more diffuse and variable, with the major separation confirmed that the motor area lies anterior, and the sensory posterior to the Rolandic fissure. The sequence within this region from above downward (legs at vertex, then arm and hand, then head, lip, and jaw) are completely established. A figure drawn in proportion to the importance of their ' psychic ' representation results in a grotesque homunculus, which presents the actual conscious and control value of these bodily regions. Bard and Woolsey find the same localized somaesthetic area, in the loss through excision, in cat and monkey, of a specific postural or limb-placing reaction.

The older view of sharply localized areas for all cortical functions was a half-truth, and the ' equipotential ' theory that any area was able to take up any function, or that loss of function depends upon quantity of tissue destroyed, has been modified by Lashley, its chief exponent, to the recognition of two orders of cortical relation, the one with a ' mosaic ' definiteness of location, and the other with far more diffuse localization. There is some substitution of function ; but specialization dominates the cortical pattern, and plays an increasing rôle in the highest types of brains. Stimulating a mass of brain-cells cannot precisely parallel what actually takes place under sensory stimulation. Brickner's case of nearly total loss of both frontal lobes (unilateral loss may entail only slight deteriorating effects) shows the focus of impairment to be in intellectual synthesis, inhibition, and emotional level. The frontal lobes maintain integrity of superior function. Except for speech, they represent additive, ' luxurious ' elaborations of processes initiated in other cortical areas. The conclusions confirm the position of Hughlings Jackson of a half-century ago—then dependent upon the interpretation of epileptic seizures, and his rare insight. In consequence of recent contributions, there has been established a far more complete picture of the neural basis of mind.

Cannon, Lashley, Bard, and others bring additional evidence of the separability of the psychic emotion and the physiological registration of the expression of the major vital emotions, such as rage and fear. The thalamic region is definitely the seat of emotional expression ; but it requires some process of cortical radiation to arouse the full emotion. The relations between the subcortical and cortical emotional ' ring ' await clarification. The James-Lange approach is proved out of focus.

Prominent in recent discoveries are the brain-waves, proving that the brain is not a passive organ awaiting stimulation, but initiates activity. The patterns of brain-waves differ in waking activity and sleep, and in the ' floating-off ' feeling and in actual sleep by way of changes in frequency and form. The brain-waves, representing electrical potentials, are rhythmical, and their fluctuations suggest change in a rippling of a pattern. The alpha type has a frequency of about 10 and the beta type of 25 per second. Brain-waves may eventually give a clue to differential drug action, stimulants, and narcotics, and to severe psychopathic disturbances. There are individual types. They give no indication of the content but only of activity of the life processes of the cells. They represent the general condition which a total stimulus meets and directs to specific courses through neo-pallial organs.

The recording of brain-waves (oscillogram or electro-encephalogram) has been applied to the objective study of primary organic responses and to the study of excitations of vision and hearing. Carmichael has demonstrated the development to responses in guinea-pigs from the forty-eighth to fiftieth day of gestation, and correlated them with development of the nervous centres, and thus restated the relations of maturation and learning. From the responses of the young of the opossum, Bray draws similar conclusions as to completeness of response in early stages.

The record of the electric changes when sound reaches the ear, by Weaver and Bray, shows that the tone of low or middle range retains its specific vibrational characteristic in the auditory nerve and primary brain centres ; which fact has a bearing upon the functioning of the parts of the ear and their development. By combining the methods of conditioning and recording of electric potentials, Culler has shown that each audible frequency has its own focus of response within the cochlea, the lowest tones of the registry near the apex of the cochlea ; that the acoustic vibrations continue in disparate paths, and in conformity to their pattern in the cochlea along the auditory nerve and lower centres. This result provides an additional basis for the analytical power of the human hearing, which makes speech and music possible.

A further interesting auditory study concerns the function of the ear in detecting the direction of sounds. A pseudophone makes sound from the right which would thus be recognized as louder in that ear, actually louder in the left ear. This confusion is even more difficult to adjust to than the pseudoscope of Stratton, which compelled the eyes to see with a direct image. All this bears upon the early fixation of habit in the neural pathways.

Along with the objective study of cortex and brain-waves, the technique of the conditioned reflex has been developed by Hull, who bases upon it an elaborate series of formulations, extending to a system of explanation of the mental mechanisms of adaptive behaviour. His researches form a noteworthy programme. The eyelid pupillar, knee-jerk, plantar reflexes, hand withdrawal, respiration, pulse, feeding reaction of infants, urinary output, etc., as well as the original salivary secretion, all are subject to conditioning. This Hull regards as the exemplar of the learning process at all grades. It is not the omission of ' consciousness ', for which he finds no place in a scientific formulation, but the neglect of the entire cerebral evolution, in which conditioning plays a minor rôle, that forms the ground of objection to this mechanistic scheme. The cortex may be interpreted as an elaborate device to supersede, to limit, and to escape conditioning.

An impressive advance is that of the field of animal behaviour. The presentation of the methods, principles, and results of *Comparative Psychology*, by Warden, in three volumes, sets a model for other divisions of the rapidly expanding experimental sciences. Especially notable is the contribution to the mental and emotional life of the anthropoid apes, proving their foothold on the lower rungs of the ladder of human intelligence. These conclusions derive from the studies of Yerkes, of Mme Abreu at Havana, and Mme Kohts in Russia. The field of experimental psychology may be inferred from the contributions here sampled.

The experiments of Rhine, claiming to establish the existence of extra-sensory perception—a more precise term than *telepathy*—in a selected series of a few subjects, have aroused great popular interest. The scientific attitude is at present sceptical. There has been no attempt to meet the biological objections to such an agency ; manipulative errors are suspected, especially in the absence of control by independent methods. (*See* PSYCHIATRY; PHYSIOLOGY, etc.)

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PUBLIC ASSISTANCE. Maintenance in Great Britain of people who have exhausted their unemployment insurance rights through long unemployment, and of poor people of limited means, was transferred on Jan. 1, 1935, from local authorities to a central organization known as the Unemployment Assistance Board. The Board, however, still rely on the advice of local advisory committees, whose knowledge of peculiar local circumstances and of the needs of individual applicants is valuable. The second annual report of the Board for 1936, issued in July 1937, says: ' The Board have in short set out with the intention of combining the benefits of a centralized administration through a government department, with the local knowledge and personal touch that local people can bring to bear upon the service. It is, as the Board can conceive it, a real partnership of interest'. The creation of the Board levelled out disparities in relief formally granted by the guardians of the poor under local authorities before 1935, and there was considerable criticism, particularly from districts where the new scales were lower than the old. The Board have repeatedly claimed, however, that their administration is humane, and in the autumn of 1937 the minister of labour announced in the House of Commons that the Board's officers had been instructed to be especially sympathetic to applicants during the winter of 1937–38, because of hardship inflicted from the rising cost of living in Britain.

This instruction was estimated to result in average increases in relief of 2*s.* per family. Revised regulations of scales, more generous to applicants, came into operation on Nov. 16, 1936, in anticipation of the transfer to the Board of 200,000 able-bodied unemployed from the care of local authorities on April 1, 1937. These revised scales increased rates of relief, and introduced more flexible methods of assessing rent allowances and more generous household earnings tests.

Average weekly payments to applicants rose from 23*s.* 4*d.* in 1935 to 24*s.* 8*d.* in 1936, but the total cost of the service fell by more than £3 millions because of a fall in the number of applicants, due to increased industrial activity throughout Great Britain.

Comparisons of total payments and applicants in the two years are:

	Total Cost	Number of Applicants for Relief
1935	£42,607,000	712,500
1936	£39,297,000	630,000

In 1934, which was the last year of the transitional payment scheme during the transfer of applicants from the local authorities to the Board, the cost of relief was £43,137,000.

The Board's latest report states: ' The generality of the Board's applicants are ordinary men and women capable of managing their own lives and making use of their allowances to the best advantage. They are no different in character or aptitude from the claimants to unemployment insurance benefit or the persons in employment. It is important that the Board's outlook should be firmly based upon a recognition of this fact, and it is on this account that the fall in the register of applicants has given so much satisfaction'.

A disquieting feature of the returns, however, is that a large proportion of applicants are by present standards relatively old. Forty-five per cent. of the applicants are over 45, compared with 27 per cent. of the claimants to unemployment insurance benefit. There is also, because of long unemployment, a high proportion of unemployables among relief applicants.

A test taken by the Board of all its applicants in 1935 showed that 55 per cent. of all applicants had no resources, while the remaining 45 per cent. had resources to the annual value of £24 millions.

PUBLIC HEALTH ENGINEERING. The basic physical and physiological data which underlie the practical arts of ventilation and air conditioning are being investigated with renewed interest and from some new points of departure. Professor Winslow and his associates at Yale have developed a new technique in the study of ' partitional calorimetry ', whereby thermal equilibrium in the body is studied as the algebraic sum of heat production and of heat loss or gain by the avenues of radiation, conduction and convection, and evaporation, each separately determined. A novel feature of these studies is the use of polished copper walls, reflecting radiant heat from a hidden source, hence having radiation temperatures independent of their actual temperatures.

Interest in the relation of radiant heat to comfort and health has been largely stimulated by work carried out in Great Britain. Following a renewed interest in radiant or so-called panel heating, the mean radiant temperature has been defined as the uniform temperature of an enclosing sphere that would exert the same total radiation effect upon a human body as do the actual enclosing walls, floor, and ceiling of a given space; and the equivalent temperature, as that uniform temperature of air and surrounding walls, that would result in a heat loss from the body by radiation and convection equal to that actually experienced. Mr. Dufton, of the Building Research Station, has developed an instrument, the Eupatheoscope, for integrating radiant and convective heat loss from the body, and Dr. Bedford, of the Industrial Health Research Board, has described the Globe thermometer for distinguishing radiant from air temperatures.

There is likewise a renewed interest in the physiological bearing of radiation as distinguished from the usual warm air heating. Dr. Hardy at Cornell university medical college, New York, has demonstrated that perception of warmth results from radiation stimulus which brings about an elevation of skin temperature of only ·003° C. at a rate of ·001° C. per second.

The demonstration by Professor Wells that bacteria and viruses of the naso-pharynx may, after evaporation of their carrier droplets of mouth spray, remain suspended in the air for appreciable times and be carried over considerable distances in viable condition, has led to a renewed interest in the possibilities of air-borne infection. Wells has extended his experimental studies of ultra-violet ray disinfection to actual working tests in hospital wards and operating rooms, and laid down a standard procedure for evaluating the disinfectant power of a given lamp system in a given room system. On the interpretative side Buchbinder has examined some 7,000 samples of air from school-rooms, theatres, tube coaches, etc., with special reference to ' total counts ' and numbers of alpha haemolytic streptococcus present and capable of growing on blood-agar. The latter in particular appear to be always present in the air of occupied places and to provide a criterion of air pollution by human occupancy.

Water Supply.—Definite proof of the relation between fluoride in drinking water and ' mottled enamel ' of children's teeth has led to a systematic search for treatment methods capable of reducing fluoride content to below the dangerous concentration—about 0·8mg. per cent. Several methods have been proposed, the most successful depending upon the application of excess magnesium salt and its subsequent removal by usual softening procedures.

An unusual prevalence of enteric disturbances of obscure etiology and origin has caused concern among epidemiologists and water-works operators alike. Many of these small outbreaks appear to be water-borne, and there is serious questioning by water-works men of the adequacy of bacteriological evaluation of water based wholly upon the *B. coli* test.

Sewage Treatment.—While in the United States there has been a considerable revival of interest in chemical treatments, the more complete bio-oxidation processes are still in favour in Great Britain and on the Continent. The great works of the West Middlesex Main Drainage Scheme, at Morden, serve a present population of over one million, with a complete activated sludge plant, the largest in the Empire. In Germany, chemical processes are limited to those industrial wastes where biochemical processes are inadequate. Both in Great Britain and in the United States, the ultimate biological mechanism involved in the oxidation of organic wastes is being intensively studied. The consistently uniform rate of oxidation observed in laboratory tests of the biochemical oxygen demand, and apparently representing some rather fundamental biological principle, is not maintained under the conditions of the activated sludge treatment, where rates of oxidation may be as much as 10 times greater.

Food Control.—In the United States, pasteurization of milk is practised almost universally in the larger cities, and the practice is extending to the smaller communities. The practice is also being rapidly extended in the principal British cities and on the Continent. While it is known that holding milk at from 142 to 145° for 30 minutes provides adequate protection, it has hitherto been impossible for health authorities to assure themselves that each particle of milk delivered has been thus treated. The recent development of the phosphatase test now permits the authorities to assure themselves on this point. The enzyme phosphatase, universally present in raw milk, is practically completely destroyed in 30 minutes at pasteurizing temperature. The test distinguishes milk underheated by one or two degrees, or held for 25 instead of 30 minutes.

General.—The sanitarians of Great Britain are actively interested in the applications of the open-air school. Begun as a preventive and curative measure in tuberculosis, the practice is being advocated for general use. Dr. J. U. R. Simpson has recently summarized its advantages, among which he notes increased metabolism of 40 per cent. to 50 per cent., resulting in better appetite and nutrition. To this feature, coupled with regular rest, controlled diet, and good medical care, he attributes much of the observed advantage. (E. B. PH.)

PUBLIC HEALTH SERVICES. Among the statutes consolidated in Great Britain during 1936 and coming into force in 1937 the most important measure relating to health was the Public Health Act. It is mainly a consolidating measure but contains a number of amendments of the pre-existing law, which had become confusing and redundant. The effect has been rather to clarify the legal basis of established procedure than to alter its direction.

Maternity Services.—The Midwives Act, 1936, which came into practical operation during 1937, placed the duty on local authorities of securing that a sufficient number of whole-time qualified and salaried midwives and maternity nurses would be engaged to meet the needs of the area. It has been a difficult task to determine how best to distribute this service as between midwives employed by subsidised voluntary bodies and those directly attached to health departments, and to allow for the indeterminable continued practice of private midwives. The scheme is in its infancy, and, at present, is specially notable as the first extension generally into the homes of England and Wales of a service of a medical nature rendered by whole-time salaried officers.

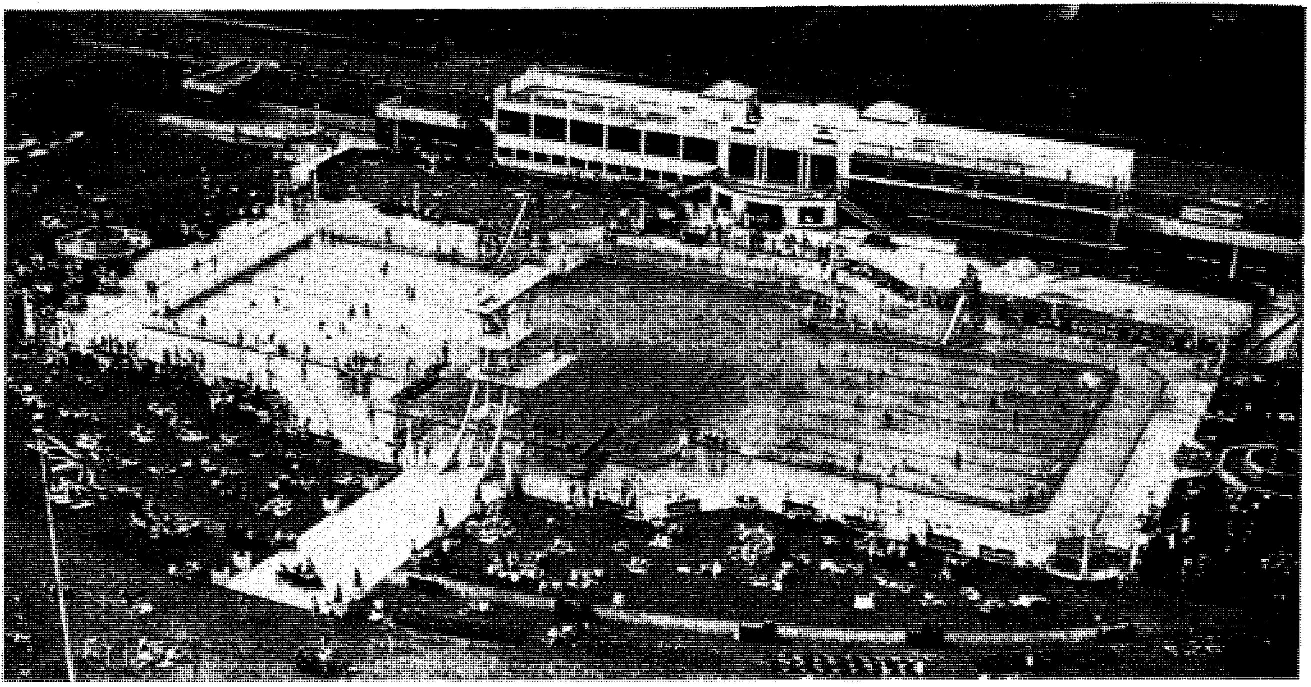
Further developments in State midwifery may follow important official reports on maternal mortality issued during the year (1) (2). One recommendation aims at empowering local authorities to ensure that the best local obstetric skill is made available for women in confinement who require medical aid in addition to the service of a midwife. It seems likely that this will involve some form of selection of the medical practitioners summoned by midwives to attend women in pregnancy and labour. In this connexion the terms of the Maternity Services (Scotland) Act, 1937, are interesting. This act places the duty on Scottish authorities of making not only midwife but also medical provision, including anaesthetists and specialist obstetricians, for all women during pregnancy, confinement, and the puerperium.

Regional Co-ordination.—The movement towards hospital co-ordination inaugurated by the Local Government Act, 1929, is crystallizing in the formation of joint hospital boards or committees composed of representatives of one or more local authorities, of voluntary hospitals serving the area and, sometimes, of the associated university or medical school. An extension of this principle to a wider range of services over a large territory has been recommended by the Royal Commission on Local Government in the Tyneside Area.(3) The need for a review of local government areas and for a proper recognition of the place of the private practitioner and the voluntary hospitals in relation to the public health has been stressed in a comprehensive and well-informed Report on the British Health Services by P.E.P.(4)

Health Propaganda.—For the first time in England and Wales a prolonged campaign of advertisement of the health services has been started by local authorities, under the aegis of the Ministry of Health and the Central Council for Health Education. Its primary object is to tell the people about the existing provision available in their own district, but it is hoped that it will also promote health consciousness. The facilities for obtaining extra nourishment and for promoting physical fitness are receiving special emphasis.

Clinics.—During the past 30 years clinics have been established for special public health purposes, such as the care of mothers and children, school health, venereal diseases, tuberculosis, dental care, psychiatry, child guidance, and the outdoor medical care of the sick poor. There is now an increasing tendency to provide more elaborate centres at which more than one of these services may be given. For instance, combined clinics were opened during the year at Coventry and at Heston and Isleworth.(5) The former is a building of two stories, the ground floor being devoted to maternity and child welfare and the first floor to school health and dentistry. The latter is on one floor with separate sections for mothers and children under school age, for school children, for dental cases, and for the deformed. In both clinics ample space is afforded for waiting and for lectures and cookery demonstrations. The Coventry centre is adjacent to, and closely associated with, the municipal hospital.

At Glasgow, a system of combined clinics is planned for different parts of the city, of which three have already been provided.(6) They serve for mothers, young children, school children, dental cases, and for the sick treated under the Poor Law. A fourth will include additional accommodation for tuberculosis. These clinics are designed to be centres for the positive promotion of health as well as curative medicine.



Fox Photos]

AERIAL VIEW OF CROYDON'S OPEN-AIR SWIMMING POOL

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(R. M. F. P.)

United States.—The difference between the organization of governmental public health services in the United States and that in Great Britain and most European countries is a difference inherent in the different forms of government. Governments with highly centralized powers have highly centralized health organizations, with supreme authority in all health matters. The government of the United States, on the other hand, is a federal government, with divided authority and jurisdiction. Local health matters remain therefore in the police power of the States, and the States delegate authority to lesser civil divisions within their jurisdictions. The Federal government administers health laws and regulations of national import, such as national quarantine laws and regulations, enters into treaties with foreign nations regarding international health matters, acts for the protection of health in inter-State traffic and the suppression of epidemics. It also engages in advisory, consultatory, and investigative activities, and aids State and local health organizations in health matters. As insanitary conditions, epidemics, and ill-health are no longer considered of purely local concern, the future may see an expanded conception and a broader interpretation of Federal health powers.

The official governmental health services consist, therefore, of the United States Public Health Service, created by Act of Congress in 1798, of State departments of health, and of the health organizations in towns, incorporated villages, counties, and rural districts. Local health ordinances and regulations must not be inconsistent with State and Federal laws. The State departments of health have jurisdiction over sanitation, control of communicable diseases, collection of vital statistics, maintenance of diagnostic laboratories, furnishing serums and other biologics, and similar health matters. The centralization and leadership in State health organizations vary; since 1920 there has been a tendency to build up stronger city and county health organizations. In addition to these official health organizations, there are many unofficial and private health organizations, professional associations, and various funds or foundations, which have made their contribution to the improvement of public health. Also many other Federal agencies, such as the Children's Bureau, the Bureau of Mines, the Office of Education, the Bureau of Chemistry and Soils, and the Food and Drug Administration, deal with some aspect of public health.

The history of public health service in the United States divides itself into four eras: the first an era of sanitation, in which public health work was largely restricted to the control of environment and the enforcement of quarantine; the second an era of development of public health education—the dissemination of popular information regarding the prevention of disease; the third an era of development of the public health concept that all potential benefits of preventive medicine should be made available to every individual, when the periodic health examination was considered the *sine qua non* of such a complete health service. (The value of the periodic health examination was apparently overestimated, but the broader interpretation of applied preventive medicine was carried over into the succeeding era); and the fourth the present era of public health, which still has the objective of medical service and medical guidance for every individual from before birth to old age, but which is marked by a shift in the diseases and conditions attacked. Following the rapid decline in acute infectious diseases, there has been an increase in the chronic diseases of adult life. The control of the common communicable diseases, many of which have been reduced

Death-rates per 100,000 Estimated Population in the Registration Area for Tuberculosis (all forms), Typhoid Fever, Diphtheria, Cancer, and Heart Disease in Five-year periods from 1890 to 1935

Disease	1890	1900	1905	1910	1915	1920	1925	1930	1935
Tuberculosis (all forms)	245·4	201·9	192·3	160·3	146·3	114·0	86·7	71·5	55·0
Typhoid (and paratyphoid) fever	46·3	35·9	27·8	23·5	12·4	7·8	8·0	4·8	2·8
Diphtheria	70·1	43·3	23·6	21·4	15·7	15·3	7·8	4·9	3·1
Cancer (and other malignant tumours)	47·9	63·0	71·4	76·2	81·4	83·2	92·8	97·3	107·9
Diseases of the heart	121·8	132·1	152·2	158·8	165·7	159·1	185·7	205·7	213·1

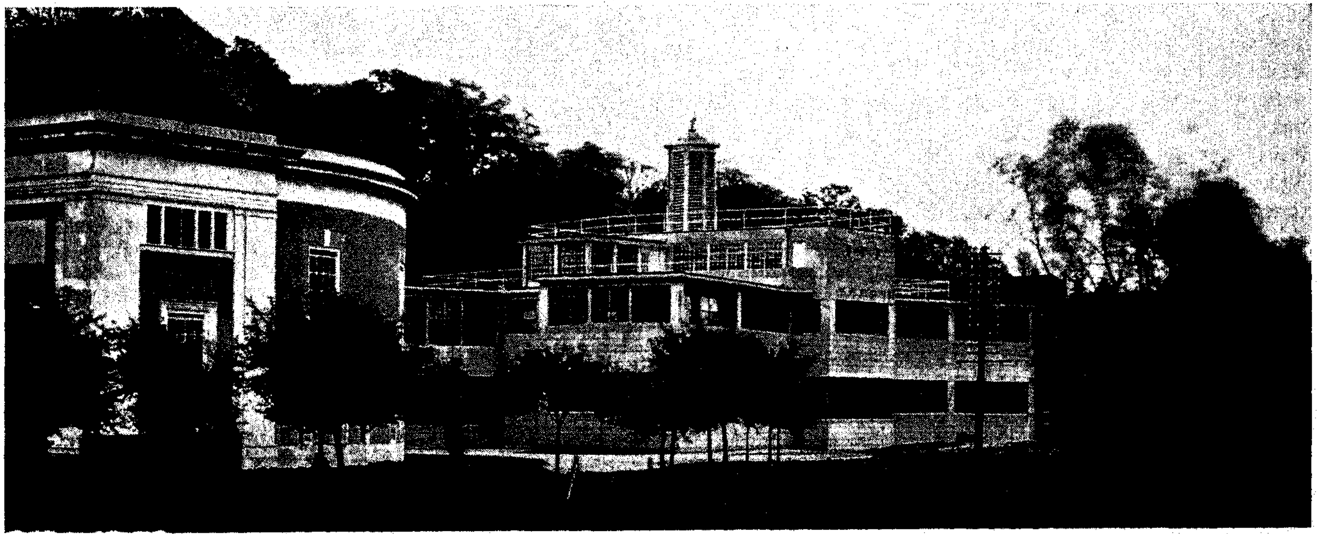
almost to a residual minimum, goes forward on its own momentum, and the emphasis of public health work is being shifted to such conditions as rheumatic heart disease, cancer, and other crippling chronic diseases which have become a challenge to the science of preventive medicine.

In recent years the United States Public Health Service has emphasized the need for better-trained public health personnel, more adequately staffed health services, and the extension of full-time health services to rural areas. These objectives are being brought near to achievement through the impetus given to public health work by the health provisions of the Social Security Act. In 1937 there were 946 counties in the United States with full-time health services, an increase of 50 per cent. as compared with the number in 1935. State and local appropriations for this work were $7,500,000 higher in 1937, the increase almost equalling the amount, $8 millions allotted to the States under the Social Security Act. Of this allotment $1,184,000 was set aside for the training of personnel, and 34 States allotted nearly $330,000 for the maintenance of adequate laboratory facilities. In the fiscal year 1937, 1,595 public health workers (1,173 nurses) completed courses of training in public health. (T. P.)

PUBLIC SCHOOLS. At the meeting of the Head Masters' Conference, held at Winchester before Christmas, a resolution was adopted that 'Independence and Freedom are the very essence of English education'. The public schools are free from public control, but they are exposed to the more subtle influence of the conservatism of their old boys and of the parents of their pupils. The year 1937, like those which have preceded it, afforded evidence of the desire of the schools to assert their freedom and to offer an education less rigid and more varied than that which sufficed when there was less effective competition from grant-earning schools. The reproach still brought against public schools, that they are content with traditional methods and obsolete aims, is not borne out by facts. The danger to-day is that a boy may be distracted by a number of activities and interests, and that what his education gains in breadth, it may be losing in depth.

Physical education, partly through the action of the government, is taken more seriously. The building of new gymnasia has been undertaken by several bodies of governors. Athletics are no longer concentrated into a series of competitions held once a year, but, where sufficient space is available, boys are encouraged to practise continually, until they can attain standards suitable for their age. The aim is not to discover champions, but to turn out a number of boys of reasonable proficiency. This policy will be reinforced when there is available a larger supply of men who have received the training which will enable them to regard physical education as a single whole, and to fit into a comprehensive scheme games, athletics, swimming, gymnastics, boxing, and fencing. It is no longer assumed that all boys must play the same game at the same time.

A similar elasticity increasingly characterizes the work in the top forms. The demands of the School Certificate Examination limit the curriculum in the Middle school. But after that stage boys are offered a wide choice. The classics are fighting a rearguard action. It is significant that many schools are building new laboratories. There is a marked tendency for boys to choose their career before they leave school and *e.g.* to take the First M.B. examination from school or to follow a special course intended as a preparation for industry or commerce. The schools, like the universities, are beginning to provide a technical rather than a purely cultural education. Closely allied with this tendency is the growth of the work of careers masters, who



Architectural Review]

THE NEW SCIENCE BLOCK AT MARLBOROUGH COLLEGE not only supply information but, with the assistance of the bureau maintained by the Head Masters' Conference, put boys into touch with possible employers.

The greatest variety, however, is to be found in the sphere of the arts and social activities. The great advance in musical achievement in the schools was recognized in 1937 by the appointment of Dr. Dyson of Winchester to the directorship of the Royal College of Music, and of Dr. Stanton of Wellington and two other school directors to important posts in the music department of the B.B.C. Art work is no longer limited to the teaching of drawing, but includes many crafts, *e.g.* printing, modelling, and sculpture. Gardening, estate work, scouting, the drama, all make demands upon the limited time available. Politics are always attractive to a small section; but the 'scarlet fever', which appeared to be endemic a year or two back, is less virulent, and the number of boys anxious to join the fighting services, as well as the administrative services of the Crown, shows a marked increase. Notably there are far more recruits for the Air Force.

Activity extends into the holidays. Boys not only attend O.T.C. and Scout camps, but they study the proceedings of the League of Nations at Geneva, work with the unemployed, run mission camps, and even explore Labrador or Newfoundland.

In many schools, the house master no longer depends for his income and his pension on the profits of his boarding house. The schemes adopted vary in different schools; but they are at one in assuming that a house master should be paid an adequate salary for responsible work, not left to make what he can as the manager of an hotel. (F. B. Ma.)

Girls' Schools.—The establishment of public schools for girls, modelled closely in the first place on the ancient public schools for boys with the house and prefect system and much the same curriculum, dates only from 1858. Since then, however, the number has steadily increased, and now includes boarding schools, some of which take day pupils, and day schools with boarding houses attached. Some of these schools provide for a special class of the community, such as the daughters of naval or army officers, or of the clergy, while some are of a definitely denominational character. The recent development of the Allied Girls' Schools is the outcome of an increased demand for boarding schools of the public-school type. None of them is in receipt of public money. They are therefore free from direct public control, although most of them have voluntarily submitted to inspection either by a recognized examining body or more commonly by the Board of Education.

In process of time, a certain amount of differentiation has developed between the girls' public schools and the boys' schools on which they were originally modelled. Nowadays, a general education is pursued up to the School Certificate standard, after which many specialized courses are provided in classics, modern studies, science, mathematics, art, and music. Every school provides courses in domestic subjects and hand-work, and various systems of self-government have been tried. Girls' schools have led the way in physical training, and expert specialist teachers are found on every staff. Great importance is attached to training in social service; most schools support a settlement, mission, club, or holiday home for poor children.

Most schools chronicle some work of extension during 1937. Space forbids enumeration of any but a few. At Cheltenham College, a new junior school and new junior boarding house were opened; the library was extended. St. Leonard's celebrated the school's sixtieth anniversary by a large reunion, two boarding houses were enlarged, and fencing was included in the curriculum. Benenden opened a new domestic science kitchen, and a new school hall was begun. St. Paul's school opened a holiday home, Langford Court, in Essex, for the benefit of people in Stepney. Harrogate doubled its preparatory school.

The schools are far from being stereotyped, and various experiments are being tried out. At Sherborne, much use is being made of broadcast talks, especially those on divinity and Church history, and discussion groups are formed. Badminton school, Westbury-on-Trim, lays great stress on internationalism. Liverpool College has recently formed a social service league. St. Mary's, Calne, has started a popular class in car mechanics. For the first time a holiday camp for public-school girls and club girls was held in the summer on the pattern of the Duke of York's for boys.

Coronation year meant much for the schools. Representatives attended the youth rally in the Albert Hall and the service in Westminster Abbey. This proved a great inspiration to the schools, to whom the representatives described their experiences. (E. A. Ph.)

PUBLIC SERVICES. In Great Britain the public services owned or supervised by the State or local authorities are concerned mainly with the provision and distribution of various forms of power (*see* ELECTRIC LIGHTING; ELECTRIC TRANSMISSION AND DISTRIBUTION) and gas (*see* GAS), with communication and transport (*see* ELECTRIC TRANSPORT; MOTOR TRANSPORT; RAILWAYS), and water supplies (*q.v.*). In addition must be mentioned the Post Office (*q.v.*), the British Broadcasting Corporation (*see* BROADCASTING), the many

Wide World Photos]
FIREMEN DEMONSTRATE THEIR SKILL WITH THE HOSE AT THE NEW HEADQUARTERS OF THE LONDON FIRE BRIGADE

amenities such as libraries, baths, markets, parks, street-lighting, etc., and the health services of various kinds maintained by the State and municipal authorities and that are more properly grouped under social services (*q.v.*). The tendency for such services to be concentrated increasingly in the hands of regional bodies is a marked feature of recent years, exemplified in 1937 by the recommendations of the Royal Commission on Tyneside (*see* LOCAL GOVERNMENT), the proposals for the formation of public transport boards in Brighton, on Merseyside, and elsewhere, and the plans of the government, to form the subject of a parliamentary Bill in 1938, for the amalgamation of electricity-distributing bodies into larger units.

A good example of the lines on which new public service authorities are being constituted is the London Passenger Transport Board, formed in 1934 to co-ordinate passenger transport undertakings in the metropolitan area (extending for a distance of some 30m. from Charing Cross), and consisting of seven members appointed for varying periods by a body of *ex-officio* trustees, the capital of the board being mainly issued as stock to the various authorities and organizations by the amalgamation of whose interests the board was constituted, a minimum rate of interest being guaranteed to stockholders.

'Air Raid Precautions' was a new public service that was coming to the front at the close of 1937, as also was the provision of airport accommodation by local authorities, over 60 such airports being already in use or in course of construction. (X.)

In the United States many of the functions performed in Great Britain by the public services are fulfilled by public utilities, which have continued to progress from a technical, economic, and regulatory point of view. Increasingly of recent years, the economic and corporate organization of these industries has assumed inter-State proportions, and this extension of Federal regulation has led to the formation of various commissions.

The Securities and Exchange Commission (S.E.C.) administers three statutes: the Securities Act of 1933, first administered by the Federal Trade Commission; the Securities Exchange Act of 1934, which created the S.E.C.; and title I of the Public Utility Act of 1935. The first statute required registration of new security issues with full and fair disclosure of material facts. The Act of 1935 declared that 'public utility holding companies and their subsidiary companies are affected with a national public interest', and provided for measures designed to give full and fair disclosure of the corporate structure of holding company systems controlling gas or electric operating companies. The Act provided for the elimination of uneconomic holding company structures and for extensive regulation of corporate activities.

Although the 1935 Act did subject utility holding companies to detailed and stringent regulation, it did not establish control over earning power as is true of public utility regulation. The analogy is more nearly with regulation of insurance and banking companies. However, the restrictions look to the control of corporate practices directly bearing upon utility operating companies.

The Federal Power Commission (F.P.C.), established by the Federal Water Power Act of 1920, was reorganized in 1930. Title II of the Public Utility Act of 1935 vested in the commission regulation of the rates and charges of electric utilities in inter-State commerce, supervision over their mergers, sales or transfers of property, over security issues, and over other matters. Where the commission's powers under the Act overlap with those of the State commissions the latter are accorded a priority of jurisdiction. Its powers to fix reasonable rates for electric energy transmitted in inter-State commerce are supplemented with authority to co-operate with the State commissions. Accordingly, the commission has prepared, in co-operation with State commissions, a uniform system of accounts, applicable to all companies subject to its jurisdiction, which became effective Jan. 1, 1937. By the end of the year considerable progress had been made in regulatory accounting, and in the co-operation between Federal and State commissions.

Other new Federal agencies having important bearings upon public utilities to the United States are the *Rural Electrification Administration* (R.E.A.), whose purpose is to facilitate the introduction of electric service into unserved rural areas; the *Federal Emergency Administration of Public Works* (P.W.A.), to provide for the construction of useful public works, by supporting loans and grants for sewerage and water systems and electric generating and distribution plants; and the *Electric Home and Farm Authority.* A number of Federal projects have also been undertaken in the interests of the conservation of national resources, such as river improvement, navigation, flood control, salinity control, irrigation, and power production. (*See* TENNESSEE VALLEY AUTHORITY, etc.) (M. G. G.)

PUBLIC STATUTES OF THE UNITED KINGDOM. In international affairs, the London Naval Treaty Act, 1937, gave legislative effect to a minor clause of the London Naval Treaty, 1936, which deals with the procurement of an Admiralty licence for the building and dispatch of vessels of war.

In the region of national defence, the Defence Loans Act provided money for the rearmament policy of the government; it enabled the Treasury to issue out of the Consolidated Fund from time to time during the five financial years ending March 31, 1942, sums not exceeding in the aggregate £400 millions for the defence services. The Air Raid Precautions Act assists local authorities in developing protective schemes against air raids, a considerable portion of the total cost being borne by the national exchequer.

The Regency Act is of considerable constitutional importance. It improves upon earlier and rather haphazard legislation by providing for a regency if the sovereign is under 18 years of age, or if certain specified officers of State certify that he is, by reason of infirmity of mind or body, incapable of performing the royal functions, or is, for some definite cause, not available for such performance. The regent is to be the person next in the line of succession to the Crown, provided that he is a British subject of full age, and is domiciled in the United Kingdom and is not disqualified by the Act of Settlement, 1701 to 1702. If the illness does not amount to the infirmity just described, or in the event of absence or intended absence, the sovereign may delegate the royal functions to certain 'Counsellors of State'. Provision is also made for guardianship of the sovereign during a regency and for incapacity of the regent himself. Another statute concerning constitutional law is the Ministers of the Crown Act, which overhauls and consolidates the law relating to the salaries of ministers of the Crown; in particular, the salary of the prime minister is to be £10,000 and that of the leader of the opposition £2,000.

Public health and welfare were treated in the following

Acts. The Public Health (Drainage of Trade Premises) Act controls the discharge of trade effluents into sewers. The Physical Training and Recreation Act is a striking departure from the *laissez-faire* attitude towards athletics. It continues the existence of two national advisory councils which are to investigate and advise upon the maintenance and improvement of the physical well-being of the people by means of exercise and recreation. The councils are to appoint local committees and sub-committees with similar duties of review, examination, and report. The Board of Education may make grants in aid of local requirements. The Local Government Superannuation Act makes further and better provision for the payment of superannuation allowances and gratuities by local authorities and by certain statutory undertakers. The Act is of widespread interest in view of the great number of employees who are affected by it. A similar enactment, the Local Government Superannuation (Scotland) Act, deals with Scotland. The Widows', Orphans', and Old Age Contributory Pensions (Voluntary Contributors) Act extends on a voluntary basis an Act of 1936 to men and women whose incomes do not exceed respectively £400 and £250 a year. The age of applicants during the first year after the Act must be under 55, and of applicants thereafter, under 40. Weekly contributions are to range from sixpence upwards.

As to trade and commerce, the Trade Marks (Amendment) Act embodied many amendments of the laws relating to that topic. The Factories Act is chiefly a great consolidation of the Factory and Workshop Acts, 1901 to 1929, but among its 160 sections are also included some substantive amendments of this branch of the law. The Export Guarantees Act amends and consolidates the Overseas Trade Acts, 1920 to 1934. In order to encourage overseas trade, the Board of Trade may, with the consent of the Treasury, give to any person carrying on business in the United Kingdom financial guarantees in connexion with the export to any country of goods, not being munitions of war. In general, the guarantees are limited to home-made goods. The amount of liability of the Board of Trade in respect of such guarantees is not to exceed £50 millions.

As to agriculture, one branch of farming received much-needed encouragement in the Livestock Industry Act, the chief points in which are the development and better organization of this industry, payment of subsidies to the producers of fat cattle, and regulation of the importation, marketing, and slaughtering of livestock. More general assistance is given to farmers by the Agriculture Act, which assists them in increasing the fertility of their land, secures them against any substantial fall in the price of oats and barley, raises the limit of the quantity of wheat in respect of which deficiency payments under the Wheat Act, 1932, may be made at the full rate, makes further grants for land drainage, and promotes the eradication of diseases of animals and poultry, establishing for that purpose a national service of veterinary inspectors.

In private law, the greatest change made by the legislature was the Matrimonial Causes Act. The English law of divorce exhibited some crying defects which had led to equally crying abuses. The grounds for divorce were so crabbed and so out of touch with modern ideas that artificial adultery was used as a mask for involving the jurisdiction of the Divorce Court in cases where there was in fact complete incompatibility of temperament or some more substantial reason for claiming a dissolution of marriage. Of these latter reasons the Act takes account by allowing either spouse to petition for divorce on the ground of (1) adultery, or (2) desertion for three years, or (3) cruelty, or (4) incurable unsoundness of mind after care and treatment for at least five years; and a wife is allowed to do so on the ground that her husband has been guilty of rape, sodomy, or bestiality. The following restrictions are laid down: (i) Where adultery is proved, divorce will not be decreed if there has been connivance, condonation, or collusion on the part of the petitioner. (ii) No petition may be presented until three years have elapsed from the date of the marriage; but this may be relaxed in cases of exceptional hardship suffered by the petitioner or of exceptional depravity on the part of the respondent. (iii) The petitioner's own adultery or cruelty may prevent his or her success in the suit. The Act also deals with judicial separation, which is now obtainable on any of the grounds on which divorce may be decreed, subject to the like qualifications, except the restriction relating to the first three years of marriage.

Certain new grounds for seeking a decree of nullity are also added. They are: (1) non-consummation of the marriage owing to wilful refusal of the respondent; (2) that at the time of the marriage there was on the part of the respondent (*a*) unsoundness of mind, or recurrent fits of insanity or epilepsy, or (*b*) venereal disease if it were in a communicable form, or (*c*) pregnancy by some person other than the petitioner. But in the cases under (2), the Court must be satisfied that the petitioner was, at the time of the marriage, ignorant of the facts alleged; that proceedings were instituted within a year from the date of the marriage; and that marital intercourse had not taken place since the petitioner discovered the existence of the grounds for the decree. Courts of summary jurisdiction are given wider powers in making separation or maintenance orders. The Summary Procedure (Domestic Proceedings) Act is another statute affecting private law. It makes several improvements in the application of this procedure to 'domestic proceedings' (matrimonial disputes, bastardy, guardianship of infants) and in the regulation of the duties of probation officers. In such proceedings the Court is to include, so far as is practicable, a man and a woman; the public (except press representatives) are in general to be excluded from the hearing; and newspaper reports may publish no more than the names of the parties and witnesses, the grounds of the application, a concise statement of the charges and defences, legal points, and the decision of the Court. *See The Statutes 1937* (in the Law Reports series). (P. H. W.)

PUBLISHING. The number of books published in Great Britain during 1937 was higher than that of any previous year. According to the records of *The Publishers' Circular* and *The Publisher and Bookseller*, the accompanying table is an analysis of books published in Great Britain and Ireland during the year.

As may be observed from a detailed examination of this table, the only notable decrease was in fiction, the figures for which are 236 lower than in 1936; and it is worth recording that the whole of this decrease was in new or translated fiction, and that the number of new editions of fiction remained within two of the 1936 figure. Publishing continued to be spread fairly evenly over the year. The slackest months were August and December; and November, with 1,920 books, was the busiest month ever recorded in the history of British publishing.

In the United States during 1937 there were published

Classes of Literature (International Classification)	New Books			New Editions	Totals for 1937	Totals for 1936
	New Books	Translations	Pamphlets			
Philosophy . .	217	18	12	26	273	274
Religion . . .	745	68	78	126	1,017	948
Sociology . .	693	24	290	84	1,091	1,177
Law . . .	140	3	40	82	265	260
Education . .	242	1	46	35	324	293
Military and Naval .	123	—	62	41	226	35
Philology . .	211	3	16	28	258	235
Science . . .	567	14	58	119	758	678
Technology . .	516	4	113	150	783	695
Medicine, Public Health, etc. .	377	7	73	147	604	527
Agriculture, Gardening . .	149	1	36	51	237	190
Domestic Arts. .	98	—	10	14	122	128
Business. . .	96	—	16	32	144	138
Fine Arts . .	288	7	29	50	374	338
Music (Works about) . .	72	1	17	9	99	78
Games, Sports, etc. .	239	4	11	42	296	283
Literature . .	333	19	27	72	451	473
Poetry and Drama	397	40	75	152	664	596
Fiction . .	1,817	68	—	2,860	4,745	4,981
Juvenile . . .	905	11	318	529	1,763	1,608
History . . .	611	34	47	101	793	645
Description and Travel	564	27	17	157	765	661
Geography . .	74	2	4	14	94	81
Biography . .	694	62	24	156	936	863
General Works .	204	—	—	—	204	187
Totals . .	10,372	418	1,419	5,077	17,286	16,572
	12,209					
Totals for 1936 .	11,686			4,886		16,572

9,273 new books and 1,639 new editions, making a total of 10,912 excluding pamphlets—an increase of 476 over the 1936 figures. Fiction headed the list of new books with a total of 1,355, and was followed by history with 863, children's books with 853, religion with 767, sociology with 693, poetry and drama with 673, and biography with 596. The highest sale for the year was attained by Dale Carnegie's *How to Win Friends and Influence People*, with 729,000 copies.

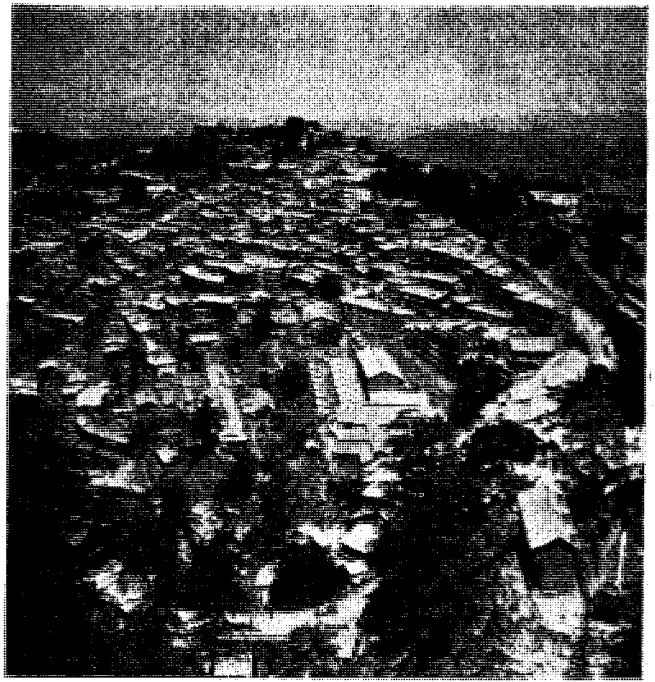
Information for 1937 is not yet available for other countries, but the indications are that publishing figures continued to rise in Germany, France, and Russia, and probably in almost every European country.

PUERTO RICO : *see* PORTO RICO.

PULP : *see* PAPER AND PULP INDUSTRY.

PUNJAB. India's 'martial province', the land of the five rivers and of the famous Sikh community. Area, 99,200sq.m.; population, 23,580,852, of whom 13 per cent. are Sikhs, 57 per cent. Moslems, and 27 per cent. Hindus. There are 29 civil districts, under a governor (Sir Herbert Emerson, since April 1933) and a legislative assembly of 175 members. There is a Unionist ministry, with a cabinet of six, Sirdar Sir Sikandar Hyat Khan being the premier. The capital is Lahore (pop. 429,474); and other important cities are Amritsar (pop. 264,840), Multan (pop. 119,457), Rawalpindi (pop. 119,284), and Sialkot (pop. 100,944). The prevailing language is Punjabi, with its western variant, and Western Hindi is spoken by 3½ millions.

Education is moderate, 1 out of every 12 men and 1 out of every 71 women being returned as literate in their own vernaculars. There are 45 colleges and nearly 12,000 recognized schools, the total number undergoing instruction being nearly 1,300,000, among whom women are still in a very small minority. The province is largely a country of peasant proprietors, with few landed magnates; and its prosperity is maintained by a magnificent irrigation system, connecting and using the waters of the great rivers by a vast network of canals, so that 42 per cent. of the cultivated area is protected against drought. This enables 28 per cent. of the cropped area to be under wheat, which forms, in normal years, the staple export of the province *via* Karachi. There are nearly 2½ million acres under cotton; millets, pulses, mustard, barley, and sugar-cane being the other chief agricultural products. There are nine cotton and six woollen mills. Carpets, rugs, and blankets are manufactured in many districts, the local wool and cotton being often blended with silk from China and goats' hair from Tibet. The mineral industry has not been developed, though iron and copper ores abound, and coal, petroleum, and gold are found. The Salt Range, however, is famous for its mines of rock-salt.



Indian State Railways]

GENERAL VIEW OF SIMLA

The **Punjab States**, most of which were until recently in direct relation with the Punjab government, have now an agent of their own, stationed at Lahore and responsible to the governor-general. They include some famous chieftainships: Patiala (ruler, Maharaja Sir Bhupindar Singh, with a salute of 17 guns); Bahawalpur (Nawab Sir Sadiq Mohammad Khan, 17 guns); Jind (Maharaja Sir Ranbir Singh, 13 guns); Kapurthala (Maharaja Sir Jagatjit Singh, 13 guns), and Nabha (Maharaja Pratab Singh, 13 guns). The total area is 42,754sq.m., and population 5,127,188.

(ME.)

PURCHASING POWER OF MONEY. The term *purchasing power of money* means the amount of goods which money will buy. Obviously, at any given moment, money has a specific purchasing power for each article which is on the market. From day to day, each of these specific purchasing powers is likely to change, for the prices of goods commonly fluctuate.

In a broad way, the purchasing power of money tends to vary directly with its relative scarcity as compared to the supply of goods. Thus, when money is scarce and goods are abundant, a unit of money will buy a relatively large amount of goods. Statistical analysis proves, however, that the purchasing power of money is correlated more closely with the physical volume of trade than with the supply of goods on hand. Thus, when the ratio of the number of units of money to the number of units of goods dealt in grows larger, the purchasing power of a unit of money falls. The reverse is also true.

Attempts are often made to measure changes in the *general* purchasing power of money. To do this accurately, it would be imperative to have on hand a record of all exchanges of money for goods occurring during the period under consideration. Obviously, no such record is obtainable. It is, however, feasible to estimate without a very large error the average changes occurring in the command of money over certain large groups of commodities. Statisticians have compiled index numbers of prices believed to be representative for such groups as the following: (1) commodities of all types sold at wholesale; (2) commodities

THE RELATIVE PURCHASING POWER OF MONEY AT VARIOUS TURNING POINTS DURING THE LAST FORTY YEARS
(Jan. 1937 = 100)

Year	Month	Index Numbers of Prices [a]				Purchasing Power of Money relative to Jan. 1937 [n]			
		All Commodities at Wholesale		Commodities purchased at Retail by the Labouring Class		All Commodities at Wholesale		Commodities purchased at Retail by the Labouring Class	
		United Kingdom	United States	United Kingdom	United States	United Kingdom	United States	United Kingdom	United States
1896	Annual figure	L 67·2 [b]	L 54·1 [e]	—	—	H 148·8	H 184·8	—	—
1897	Annual figure	68·5 [b]	54·2 [e]	—	—	146·0	184·5	—	—
1914	Annual figure	C 87·6 [b]	C 79·2 [e]	—	70·5 [l]	C 114·2	C 138·9	—	141·8
1915	Annual figure	101·5 [b]	80·8 [e]	123·0 [i]	70·2 [l]	98·5	123·8	81·3	142·5
1920	May	H 267·5 [c]	H 194·4 [e]	162·8 [i]	141·2 [l]	L 37·4	L 51·4	61·4	70·8
	June	265·0 [c]	193·6 [e]	165·5 [i]	H 141·7 [l]	37·7	51·7	60·4	L 70·6
	Nov.	235·7 [c]	155·1 [e]	H 182·8 [i]	133·1 [l]	42·4	64·5	L 54·7	75·1
1922	Jan.	134·7 [c]	L 106·3 [e]	122·4 [j]	113·4 [l]	74·2	H 94·1	81·7	88·2
	Mar.	131·5 [c]	107·9 [e]	123·1 [j]	111·3 [l]	76·0	92·7	81·2	89·8
	Sept.	C 126·8 [c]	115·5 [e]	113·8 [j]	L 111·3 [l]	C 78·9	86·6	87·9	H 89·8
1923	July	128·6 [c]	114·4 [e]	C 111·9 [j]	115·8 [l]	77·8	87·4	C 89·4	86·4
1929	July	112·8 [c]	C 112·2 [e]	99·6 [j]	115·4 [l]	88·7	C 89·1	100·4	86·7
	Oct.	C 111·8 [c]	110·6 [e]	103·3 [j]	116·4 [l]	C 89·4	90·4	96·8	85·9
	Dec.	108·9 [c]	96·6 [e]	C 108·6 [j]	C 115·4 [l]	91·8	103·5	C 92·1	C 86·7
1931	Sept.	L 81·5 [c]	82·8 [f]	84·7 [j]	99·1 [l]	H 122·7	120·8	118·1	100·9
	Nov.	H 83·9 [c]	81·7 [f]	86·1 [j]	96·9 [l]	L 114·3	122·4	116·1	103·2
1932	July	L 80·3 [c]	75·0 [g]	82·8 [j]	89·2 [l]	H 124·5	133·3	120·8	112·1
	Sept.	H 83·9 [c]	75·9 [g]	81·5 [j]	88·1 [l]	L 119·2	131·8	122·7	113·5
1933	Feb.	81·2 [c]	L 69·5 [g]	L 80·8 [j]	83·1 [l]	123·2	H 143·9	H 123·8	120·3
	Apr.	L 79·9 [c]	70·3 [g]	H 110·2 [j]	L 82·5 [l]	H 125·2	142·2	L 90·7	H 121·2
	June	88·5 [c]	75·5 [g]	L 90·1 [j]	84·2 [l]	113·0	132·5	H 111·0	118·8
	Dec.	89·5 [c]	82·3 [g]	H 94·7 [j]	89·1 [l]	111·7	121·5	L 105·6	112·2
1934	June	85·1 [c]	86·7 [g]	L 91·4 [j]	84·2 [l]	117·5	115·3	H 109·4	118·8
1937	Jan.	100·0 [d]	100·0 [h]	100·0 [k]	100·0 [m]	100·0	100·0	100·0	100·0
	July	108·7 [d]	H 102·2 [h]	102·6 [k]	102·3 [m]	92·0	L 97·8	97·5	97·8
	Aug.	107·8 [d]	101·7 [h]	102·6 [k]	102·5 [m]	92·8	98·3	97·5	97·6
	Sept.	107·8 [d]	101·6 [h]	102·6 [k]	102·9 [m]	92·8	98·4	97·5	97·2

L = low point.
H = high point.
C = marked change in trend.

[a] All relatives here presented have been arrived at by splicing together price relatives for various dates and transferring the spliced indices to the base, January, 1937.

[b] *The Board of Trade Journal and Commercial Gazette*, Jan. 13, 1921, p. 34.

[c] *Statistical Abstract for the United Kingdom* (1921–34), Statistical Department, Board of Trade, London, 1936, p. 238.

[d] *Federal Reserve Bulletin*, Nov. 1937, p. 1171.

[e] *Wholesale Prices*, Bulletin Number 543, United States Bureau of Labor Statistics, Washington, 1931, Table 1, pp. 4–10.

[f] *Wholesale Prices*, Bulletin Number 572, United States Bureau of Labor Statistics, Washington, 1933, Table 1, p. 10.

[g] *Survey of Current Business*, 1936 Supplement, United States Bureau of Foreign and Domestic Commerce, Washington, 1936, p. 12.

[h] *Survey of Current Business*, Nov. 1937, p. 23.

[i] *Statistical Abstract for the United Kingdom* (1920–24), London, 1926, p. 235.

[j] *Statistical Abstract for the United Kingdom* (1921–34), London, 1936, p. 137.

[k] *Federal Reserve Bulletin*, Nov. 1937, p. 1172.

[l] Beney, Ada M., *The Cost of Living in the United States 1914–1936*, The National Industrial Conference Board, New York, 1936, Table 1, pp. 57–61.

[m] *Survey of Current Business*, Nov. 1937, p. 23.

[n] The relatives here presented are the reciprocals of the relatives recorded in the left-hand section of this table.

dealt in largely in international trade; (3) articles consumed by the labouring classes; (4) articles consumed by farmers, and (5) corporate stocks sold on the exchanges.

The Federal Reserve Bank of New York compiles an index series weighing the price changes for various groups of commodities in proportion to the importance which each is believed to represent in the total trade of the United States. This index presumably comes the nearest of any published series to recording changes in the general purchasing power of money. Experience indicates that it fluctuates in much the same manner as indices representing the prices of articles sold at retail to the labouring classes.

Reciprocals of the index numbers just mentioned furnish reasonably good criteria of the purchasing power of money as regards each of the respective groups of commodities covered.

During the last half-century, the purchasing power of money has fluctuated widely in most nations. In both the United States and England the command of money over goods increased from the 1870's until about 1897. Discoveries of gold in the Klondike and South Africa then made money more abundant in gold standard countries. Since both the United States and the United Kingdom were comprised in this group, the purchasing power of money fell in both nations. This decline continued slowly until the beginning of the World War. Soon most European nations abandoned the gold standard and began issuing great quantities of paper money. As a result, the purchasing power of the paper money declined sharply. According to Gresham's law, which states that cheaper money drives out dearer money, European paper money drove gold to the United States, which was still on a gold standard. This advent of great quantities of new gold caused the purchasing power of money to decline greatly in the United States. When, in 1917, the United States entered the War, inflation by the Federal Reserve Banks caused the purchasing power of money to fall still more rapidly. The decline culminated in the spring of 1920. Immediately thereafter, the speculative demand for commodities collapsed, and the purchasing power of money increased sharply for something like a year, but thereafter declined somewhat. During the period 1922 to 1929 the purchasing power of money in terms of commodities at wholesale remained fairly constant, but it fell in terms of land and corporate stocks. At the close of 1929, the stock market boom collapsed, and the purchasing power of money increased sharply until 1932. Money's command over goods then began a decline. In both England and the United States this decline was greatly accentuated by abandonment of the gold standard and credit money inflation. In England the decline was still continuing slowly throughout 1937. In the United States, because of a cessation of the inflation process, the command of money over commodities at wholesale, which had been declining rather rapidly since the middle of 1936, began increasing in Aug. 1937, and this movement continued until the end of the year. In both England and the United States the latter part of 1937 was marked by a great increase in the purchasing power of money as measured in terms of stocks of corporations.

The relative extents of the major movements in this command over commodities at wholesale and retail are shown for the United Kingdom and the United States in the accompanying table, in which all data are compared to the base, Jan. 1937, at which date the purchasing power is considered 100. (W. I. K.)

PUTNAM, MRS. GEORGE PALMER: *see* EARHART, AMELIA.

Q

QUEBEC, one of the original provinces of the Dominion of Canada; area, 594,534sq.m.; population (1931), 2,874,255; estimated Jan. 1, 1938, 3,096,000. Capital, Quebec (130,954). The only Canadian city with a larger population is Montreal (818,577). Of the province's population, 1,813,606, or 63 per cent., are urban; 2,696,122 native born; only 178,133 foreign born.

Two types of trade unions are found in Quebec: the National Catholic Unions and the older International Unions. The former have a membership of about 50,000, while the membership of the latter is smaller. In 1937 the Workmen's Wages Act was passed by the provincial legislature. In brief, this Act provides that any trade agreement between employers and employees may be made binding on all employers and employees in the same kind of industry within the district included in the original agreement. This can be done only by the government after application of the employer or employees or the representative of either. The Fair Wage Act, which became operative on and after Sept. 1, 1937, provides for the establishment of a government board, which, on its own initiative or after hearing the report of a committee representative of employer and employees in equal numbers, may fix wages for minors under the age of 18, and may determine in general the working conditions of all employees in an industry. No wage lower than the minimum fixed for such minors shall be paid any employee. No employer may interfere with any of his employees who may desire to organize for collective bargaining, nor may any employer dismiss or discriminate against his employees on the ground that they are members of a trade union. Action against an employer under this last section requires the consent of the attorney-general of the province.

The net value of production in the province for 1934 was $593,066,127, an increase of 17 per cent. over the preceding year. The gross value of agricultural products in 1935 was $174,758,000; of manufactures $821,020,796, an increase of over 100 per cent. over the preceding year.

On Aug. 15, 1936, the Liberal administration of the Hon. A. Godbout was defeated by the Union Nationale, and the Hon. Maurice Duplessis became premier and attorney-general of the province. The Hon. E. L. Patenaude is the lieutenant-governor. Quebec is represented in the Dominion Parliament by 24 senators, who are appointed for life, and by 65 members of the House of Commons, who are elected for five years or less.

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QUEENSLAND. A State of the Australian Commonwealth lying in the north-east and occupying 670,500sq.m. The State governor, representing H.M. King George VI, is Sir Leslie Orme Wilson, G.C.S.I., G.C.M.G., G.C.I.E. Population (March 31, 1937), 984,824, forming 14·4 per cent. of the population of Australia. Capital, Brisbane; population (Dec. 31, 1936), 313,430. The premier of a Labour government is Mr. W. Forgan Smith.

History.—Parliament was opened by the lieutenant-governor on Aug. 10, 1937. Legislation in 1937 included Acts regulating air navigation, fauna protection, and State electricity concerns, and amending the laws relating to public health, lands, and industrial conciliation and arbitration.

Excessively dry weather was experienced in the southern agricultural districts during 1937. Public works in progress included the Story Bridge over the Brisbane River at Kangaroo Point, and the Stanley River dam. Up to June 30, 1937, the main roads commission had completed 3,879m. of roads and 13m. of bridges. Many important road links were completed during the year, both in settled districts and in areas in process of settlement. The report of the royal commission on the regulation and supply of electricity in the State was presented to Parliament, and the royal commission on transport and harbour board problems also reported to the government. The result of the International Sugar Conference was regarded as satisfactory to Queensland, whose production of bagged sugar in the 1936 season was 719,600 tons.

Trade, Industry, and Finance.—Production in 1935–36 was valued (gross) as follows: agricultural, £11,502,000; pastoral, £12,961,000; dairying and other farming, £7,443,000; mining, £2,430,000; forestry, fishing, trapping, £2,419,000; total, primary industry (gross), £35,855,000; (net), £32,283,000; manufacturing industry (net value), £15,683,000. Numbers of live-stock, Jan. 1937: 5,800,000 cattle, 20,125,000 sheep, 435,000 horses, 305,000 pigs (Jan. 1936). Unemployment fell to an average of 11,910, or 6·4 per cent. of those available for employment, in the first nine months of 1937, compared with 14,100 or 7·7 per cent. in 1936. Including relief workers, the percentage of unemployment in 1936 was 11·6. In order to encourage unemployed youths in towns to accept farm work, a scheme was introduced in 1937 for payment of wage subsidies according to age and experience. The budget for 1936–37 closed with a deficit of £280,190, the deficit having been originally estimated at £650,664. For 1937–38, estimated expenditure was raised from £16,815,228 to £17,377,313, and estimated receipts from £16,535,038 to £17,046,535, giving an estimated deficit of £330,778. The increase in expenditure was due mainly to the higher basic wage (costing £360,000), the increase in public debt interest and sinking fund (£139,000), and the discontinuance of the Commonwealth special grant (£72,000). Public works expenditure was estimated at £3,369,000 in 1937–38, including £2,219,000 for development and £1,150,000 for railways, buildings, and housing, against actual expenditure of £3,760,000 in 1936–37, including £2,527,470 for development and £1,232,830 for railways, etc. (H. V. H.)

R

RACHMANINOV, SERGEI VASILIEVICH (1873—), Russian composer and pianist. A biographical notice may be found in the *Ency. Brit.*, vol. 18, p. 869. In recent years he has composed comparatively little, and the *Third Symphony* (1937) came somewhat as a surprise. On the other hand, he is now regarded as one of the greatest of living pianists, and gives many recitals.

RACKETS. Exponents of the art of rackets are not numerous in Great Britain in present times. Thus the year 1937 was a memorable one on account of the successful bid for the world championship title made by D. S. Milford, the Marlborough schoolmaster, who beat N. Setzler, of America. D. S. Milford is also the reigning open champion of Great Britain, while the professional champion is A. G. Cooper.

Enthusiasm for the game in certain public schools promises well for the future. An interesting innovation, which was not received entirely without criticism, was the use of a system of ' seeding ' in the public schools championship. Malvern were the 1937 winners, beating Tonbridge in the final.

RADEK, KARL BERNARDOVICH (Sobelsohn) (1885–), Russian politician and journalist, born at Lwow, Poland, interested himself in socialist work from 1901, and in 1907 went to Berlin, where he assisted in the formation of the left group in the German Social Democratic Party. During the World War, Radek worked in Switzerland and Sweden, returning, on the October revolution of 1917, to Russia, where he became a member of the executive committee of the Communist Party and a close associate of Stalin and Trotsky, joining the latter's opposition movement in 1923. In 1925 he was expelled from the party and exiled, but readmitted in 1930 on retracting his Trotskyist views, and wrote thereafter many important articles on foreign affairs in *Izvestia* and *Pravda.* In 1935 he served on the committee which prepared plans for Russian constitutional reform, but in 1936 was arrested for complicity in the alleged Trotskyist plot. Radek was tried in Jan. 1937 with Sokolnikov and others, and after confessing his connexion with the Trotskyist group and his complicity in anti-Stalinist negotiations with foreign diplomats in Moscow, was sentenced to 10 years' imprisonment.

RADIO. Since it is hardly possible in a limited space to review developments in each of the many branches of radio communication, it will be necessary to consider only the more outstanding tendencies which have affected general progress during the past few years and during 1937 particularly. A large proportion of radio research during recent years has been directly or indirectly concerned with the difficulty of finding suitable wavelengths on which the rapidly increasing number of transmitters can work effectively. This difficulty affects all types of radio communication, and has inspired a great deal of work directed towards obtaining additional knowledge on the following problems : (1) The general question of the propagation of waves and particularly the possibility of using wavelengths considerably shorter than those commonly used in the past, which have hitherto been considered unsuitable for practical application. (2) The reduction of the ether space occupied by each transmitter. (3) The operation of more than one transmitter on the same ether channel.

Propagation of Radio Waves.—During the past 10 to 15 years a vast amount of scientific data has been collected concerning the behaviour of the ionosphere in relation to the propagation of what are called the ' short ' waves. This has more particularly applied to waves used for world-wide communication, that is, those between 12 and 80 metres. Such investigation can be divided into two parts, the first being of a more practical nature and consisting of careful measurements and observations which now make it possible to predict the possibilities of reception of a transmission on any wavelength. The collection of such data has of necessity been spread over a considerable number of years, and had to take into account the direction of transmission, the varying conditions arising from time of day, season of the year, and the condition of solar activity, the latter changing in regular periods of approximately 11 years. It may be said that this side of the work is approaching completion, but work still continues on the second part, concerned with the explanation of practical observations. This has consisted mainly of measurements of the height and characteristics of the reflecting layers of ionized gas, which have come to be called the ' ionosphere ' (*q.v.*). This has led to the conception of this gaseous region being divided into loosely defined layers at various heights, each layer possessing different characteristics and affecting wireless waves in accordance with their length. Considerable progress has been made during the past five years in this work, but conflicting theories still exist. A better knowledge of the ionosphere and its effect on propagation phenomena has made it possible to develop direction-finding apparatus giving greater accuracy and reliability at long distances, particularly during darkness. This is a matter of great importance to the conduct of long-distance air transport services.

It is only within the past two or three years that serious and widespread attempts have been made to study the behaviour of wavelengths of less than 10 metres on a scientific basis. It was partly the necessity of finding more ether space for additional transmitters that has so greatly stimulated this work. In addition, the recent introduction of what is known as high-definition television, which at present requires an overall bandwidth of some 5 megacycles per second for wireless transmission, has made it essential to consider the only wavelengths on which such a transmission is practicable. At the end of 1937 there was general agreement that it is not feasible to use wavelengths appreciably exceeding 7 metres for this purpose. Until quite recently it was thought that the direct ray from a transmitter using such a wavelength would not be receivable beyond the horizon. It has been found, however, that the horizon does not form a natural limitation, and reception at considerably greater distances is possible, apart from any possible effect of reflection from the ionosphere.

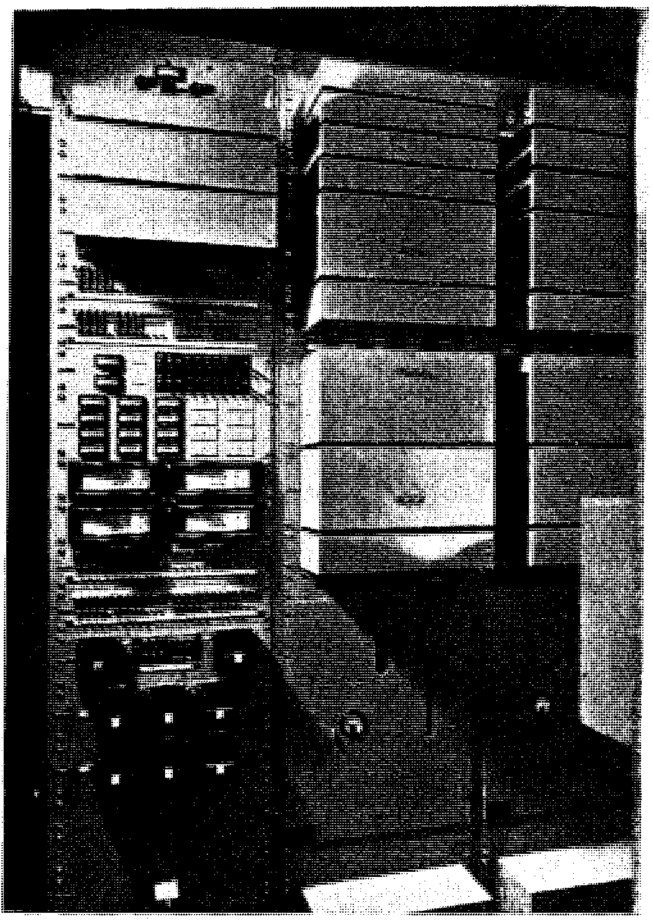
The use of wavelengths of only a few centimetres has been developed to some extent for point-to-point communication, mainly to bridge rivers and comparatively narrow stretches of sea. Such waves have the particular advantage that it is possible to focus the radiation into a very narrow beam which, on the one hand, gives increased efficiency of transmission, at the same time providing a considerable degree of secrecy of communication.

Wavelengths below 10 metres have been particularly studied by those interested in aircraft on account of the fact that the efficiency of propagation of such waves is high when there are few obstacles in the path, and because the apparatus necessary, in particular the antenna, can be of very small dimensions. The latter fact has also led to the study of possibilities for other mobile services, such as police cars and fire services. Another very important use to which these ultra-short waves have been put is for various types of navigational aids for aircraft, including 'blind landing' devices for aeroplanes approaching an aerodrome in fog.

Arising from a study of the behaviour of wireless waves, considerable advances have been made in antenna design, particularly for wavelengths below about 600 metres. The waves most commonly in use throughout the world for broadcasting services lie between 200 and 550 metres. The chief limitation to the range of high-power stations of this type has been found to be due to the phenomenon of fading caused by interference between waves travelling along the surface of the earth and those reflected at night from the ionosphere. In order to minimize this effect, it has been found desirable to increase the strength of the ground wave by every possible means, and to reduce the upward travelling components which eventually become reflected and returned to earth. What are known as mast antennae have come into almost universal use during the past three years for all important broadcasting stations in the waveband mentioned above. The radiator in this case consists of a single insulated mast, the design of which varies very considerably. The principle in all cases is similar, and depends on the fact that the radiator has a physical height of approximately ·6 of the wavelength being transmitted.

For the short waves used for long-distance communication depending on reflection from the ionosphere, much research has been carried out on the efficient design of radiating systems which confine the energy to a definite beam projected at precisely the correct horizontal and vertical angles for maximum efficiency of reflection. In the case of point-to-point commercial stations, these beams are made just wide enough to ensure covering the receiving point at the distant end, while in the case of broadcasting stations intended for long-distance reception, the width of the beam is adjusted to cover the distant area aimed at, which in general necessitates the use of a less confined beam.

The Reduction of the Ether Space occupied by Each Transmitter.—This problem has been approached in two ways. The first has consisted in devising means of maintaining extreme accuracy of the wavelength emitted by each transmitter. It is now common for a large broadcasting station to maintain an accuracy of the order of 1 part in 1,000,000, while in the case of smaller stations it has become normal to operate with an accuracy exceeding 1 part in 100,000. The effect of stability generally is that wavelength channels can be placed closer together without danger of interference due to wandering carrier waves. Similar, but less spectacular, improvements have been made in connexion with mobile transmitters, such as those used by ships.


B.B.C.]

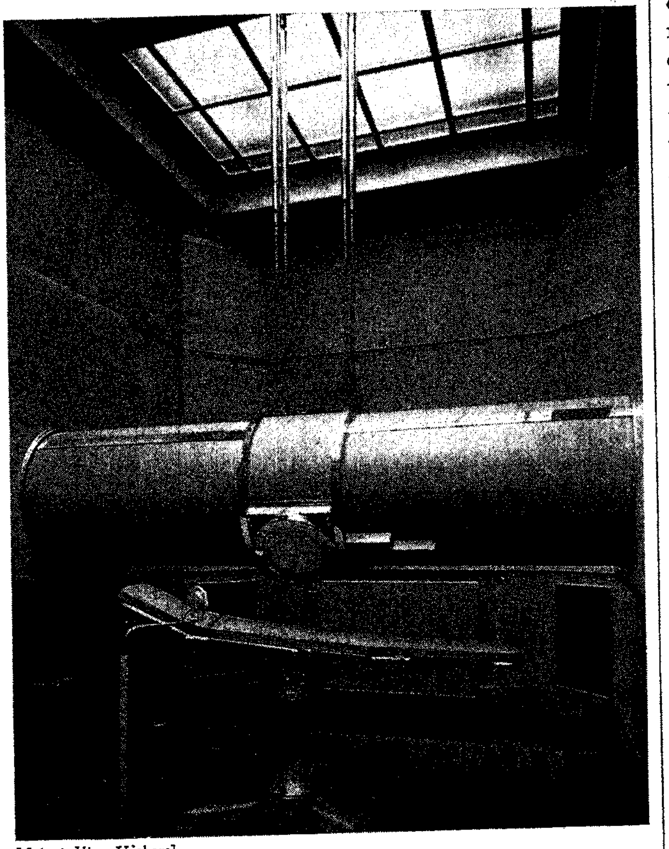
TRANSMITTER SYNCHRONIZING EQUIPMENT

The second method of reducing the ether space occupied has been so far applied mainly to commercial telephone stations, and consists of suppressing the modulation frequencies on one side of the carrier frequency. Again, in some cases multiplex transmission has been adopted whereby one carrier wave is modulated by several groups of frequencies, each providing a separate service.

The Operation of more than One Transmitter on a Single Channel.—During the last few years, success has been achieved in connexion with the synchronizing of several transmitters separated by distances as small as 150m., where the carrier waves are locked together by some form of telephone line connexion, so that they remain exactly, or very nearly exactly, in step. In such cases it has been found essential that the same programme shall be radiated from all the stations in a group. (N. As.)

RADIOTHERAPY. There are many diseases which can be successfully treated by means of X-rays or gamma-rays, but the most important, by reason of its widespread frequency and high mortality, is cancer. The cure of cancer is so dominant a problem to-day that the radiotherapy of non-malignant conditions must necessarily take second place. Most of these non-malignant conditions, however, such as ringworm, keloid scars, toxic goitre, tuberculous glands, actinomycosis, chronic mastitis, menorrhagia, respond well to such doses of radiation as entail no risk of permanent damage to normal tissues. It is quite otherwise with cancer, for which the dose of radiation necessary for the destruction of the malignant cells usually approaches and sometimes exceeds that which can be tolerated by the normal tissues. Furthermore, while laboratory research into the biological effects of radiation is steadily gathering much fundamental information, it is seldom possible to apply directly the results of such research to clinical radiotherapy. In practice, therefore, methods of radiotherapy are still largely empirical, and since patients with cancer must be followed for at least five years before the results of any one method can be evaluated, comparison between different methods is a slow process. However, certain principles in the radiotherapy of cancer are now generally accepted: (1) The dose of radiation administered shall be expressed in the international physical unit called the roentgen (r). (2) In order to minimize the damage to the skin and normal tissues, multiple ports are used, the beam of rays being accurately directed towards the tumour through each skin field. (3) Since in general the normal tissues recover from the damage produced by a dose of radiation more quickly than cancerous tissues, the total dose is fractionated over a period of some 3 to 10 weeks, the interval between successive doses (usually 24 hours) allowing the normal tissues to recover relatively to the malignant tissue. (4) The lethal dose for a carcinoma varies from some 3,000r when administered over a period of 3 weeks, to 8,000 or 10,000r over a period of 10 weeks. (5) In order to obtain, at a deeply situated tumour, the highest possible percentage of the radiation delivered to the skin, the most penetrating rays available are used.

The time-intensity factor (the number of fractions in which the total dose of radiation is given, the interval between these fractions, the total period over which they are spread, and the intensity or dosage-rate at which each fraction is administered) allows of innumerable variations of technique in the administration of a given tumour dose. In spite of the able way in which Coutard maintains that a dosage-rate of 3–5r/min. is the most important single factor in the successful treatment of radio-resistant carcinomata, it will be many years before finality is reached on this question.



Metropolitan-Vickers]

250/1,000-KV. X-RAY TUBE IN TREATMENT ROOM (THE MOZELLE SASSOON HIGH-VOLTAGE X-RAY THERAPY DEPT.), ST. BARTHOLOMEW'S HOSPITAL, LONDON

The penetrating power of a beam of rays increases as the average wave-length of the beam becomes shorter. The average wave-length of a beam of 'hard' gamma-rays is 10^{-10} cm., while that of the X-ray beams in general use to-day from tubes operated at 200kV. is 10^{-9} cm. Since the wave-length of X-rays is inversely proportional to the tube voltage, much technical research in recent years has been directed towards producing X-ray apparatus operated at 'super-high' voltages. Three such apparatuses, working at a million volts, were brought into clinical use during 1937 (the Sloan high-frequency generator at Columbia, the Van de Graaf static generator at Boston, and the Metropolitan-Vickers direct-current generator in London), while there are now a number of apparatuses working at 500–800kV. in various countries. Preliminary clinical reports suggest that the normal tissues are less injured by, and recover more quickly from, a given physical dose of 'super-high' voltage X-rays than from the same dose of 200-kV. X-rays, while the cancer is relatively more injured. The early clinical results thus appear to be better with higher voltages, but it will necessarily be some years before large enough five-year statistics are available for definite conclusions to be drawn.

While the wave-length of a 'super-high' voltage X-ray beam approximates to that of a gamma-ray beam, its intensity is many hundred times greater. The disadvantage of telecurietherapy is that the intensity of the radiation from a 5-gramme radium bomb is so low that it has to be used relatively close to the skin in order to keep the duration of each dose within reasonable bounds (1–2 hours); this small radium-skin distance, owing to the operation of the law of inverse squares, means that the depth-dose efficiency of the beam is also small, so that the bomb is of little use in the treatment of deeply situated cancers, such as those of the oesophagus or rectum. Whereas with a radium bomb at 6cm. from the skin, a tumour 6cm. deep to the skin receives only 25 per cent. of the surface dose, with a 700-kV. X-ray tube 60cm. from the skin, the tumour will receive 70 per cent. of the surface dose. It is largely for this reason that present developments in radiotherapy concern X-rays rather than radium, but it must be remembered that radium has already established itself as the treatment of choice in cancer of the uterus (intracavitary method), in cancer of the tongue (interstitial method), and in cancer of the throat (telecurietherapy).

As regards the results of radiotherapy, those available to-day refer to patients treated five years ago or more (and many advances have been made since then), and refer also mainly to cancers which were too advanced or too inaccessible for surgical removal. On such unpromising material, the larger radiotherapeutic centres can show some 10 per cent. five-year cures; but when earlier cases which are still surgically operable are treated by radiotherapy, its results are in most cases superior to those of surgery; *e.g.* carcinoma of the cervix uteri, 50 per cent. (Regaud); cancer of the tonsil, 37·5 per cent. five-year cures (Berven). Such results make it probable that even so accepted an operation as that for removal of the breast for cancer may be replaced in the next few years by radiotherapy, just as has hysterectomy for carcinoma of the cervix.

In addition to the steady progress in radiotherapy as outlined above, experimental work with neutrons suggests that they may also in due course become a valuable therapeutic agent. The invention of the cyclotron by E. O. Lawrence has made available for experiment beams of neutrons comparable in intensity to the X-ray beams in clinical use, and preliminary biological results have shown that neutrons are several times more effective than X-rays in equivalent doses. Furthermore, neutrons are the most powerful agent known for making elements artificially radioactive, so that it may be possible in the future to produce within the cancer itself sufficient radioactivity to cause its destruction. (R. PH.)

RADIUM. When the world's supply of radium was obtained from the comparatively lean ores of Czechoslovakia, the United States, Australia, and Portugal, the price of the product was £20,000 or more per gramme; the discovery of much richer ores in the Belgian Congo brought the price down to £14,000, and with the collapse of world buying power in 1929, it was reduced to £10,000; recently new deposits of unparalleled richness have been discovered in Canada, and since the construction of a refinery for their treatment the price has been cut to £8,000. Production of refined radium salts began in Canada in 1933, with 3·0 grammes of radium content, but later additions to the refinery have greatly expanded the operations, and at the end of 1936 production was at the rate of 2·5 grammes per month; at this time, the production of the plant totalled in all about 30 grammes. The entire output is shipped to England for measuring and packing into treatment needles, after which much of it is returned to Canada for sale. Although the radium-bearing ores of Colorado and Utah have been mined on an increasing scale during the past two or three years, this is primarily for their vanadium content, and little radium is recovered. (*See* also CHEMISTRY, APPLIED.)

RAILWAYS. Progressive developments on railways are necessarily of a long-period type, and the improvements brought into effect in any one year are largely dependent upon the carrying out of plans projected and perfected during the previous years. To quote a typical example, the inauguration of the London Midland & Scottish high-speed express *Coronation Scot* between London (Euston) and Glasgow depended for its success on the detailed adjustment of the permanent way, especially curves, at no fewer than 269 places on the 400 miles of route concerned.

Great Britain.—The year 1937 witnessed the opening of the electrified services between London (Waterloo) and Portsmouth by the Southern railway and the new high-speed *Coronation* trains between London (King's Cross) and Edinburgh by the London & North Eastern railway, a direct result of the financial success of the same railway's streamlined *Silver Jubilee* express between London and Newcastle, inaugurated in 1935. Limited in capacity, the *Silver Jubilee* in two years ran over 260,000 miles, or 2,680 miles each week, at an average speed of over 67 m.p.h., and, like many of the world's highest-speed trains, its reputation for popularity and punctuality is excellent. The latest high-speed streamlined express is the London & North Eastern railway's *West Riding Limited*, which commenced service in Sept., 1937. Another similar type of train, but of slower speed, giving dining-car service to every seat, is the London & North Eastern railway's *East Anglian*, running between London, Ipswich, and Norwich.

L.N.E.R. ENGINE 'COMMONWEALTH OF AUSTRALIA' ON THE 'CORONATION' EXPRESS

Useful as may be these individual high-speed trains, a general policy of acceleration is very probably of even greater importance, and, in connexion therewith, the entire recasting in 1937 of the London Midland & Scottish railway's (Midland Division) expresses between London, Leicester, Nottingham, and Sheffield may be quoted, or the Southern railway's hourly electrified services between London and Portsmouth, which virtually doubled the frequency offered by the steam service now replaced. The Great Western, for many years noted for its high-speed achievements, placed in service in 1935 the *Bristolian*, thereby reducing materially the time between London and Bristol, and its *Cheltenham Flyer* continues to be one of the world's fastest trains.

To achieve these steadily increasing speeds with due regard to economy in fuel consumption, large numbers of new locomotives have been required, and in their policy of standardization the British railways have placed no fewer than 6,787 steam locomotives in service since 1923, the year the British railways were amalgamated into four large systems. The total steam locomotive stock at the beginning of 1937 was 19,817 as compared with 23,817 in 1923; on the other hand, electric motor vehicles have risen from 631 to 1,536, entirely owing to the extension of electric traction on the Southern railway.

It is estimated that the work done in 1937, as measured in terms of passenger-miles and freight ton-miles, will closely approximate to the figures for 1923; thus similar work is being done by a much smaller number of motive power units. On the other hand, the gross receipts derived from passenger and freight traffic were, in 1936, 19 per cent.

Southern Railway]

INTERIOR OF SIGNAL BOX AT WATERLOO

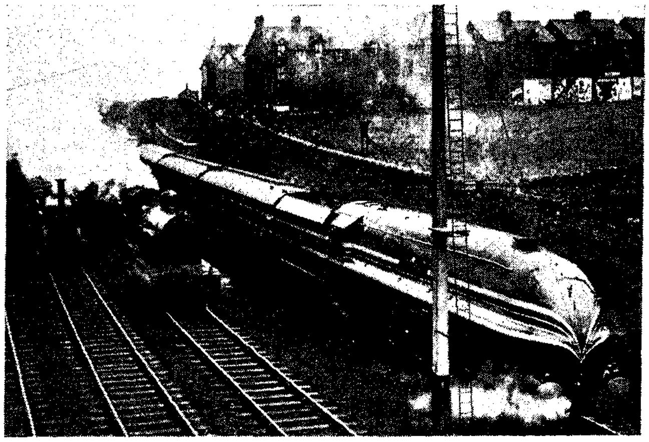
below the 1923 figure, but this was largely offset by a 19 per cent. decrease in the comparative expenditures. The railways' ownership of cross-Channel steamer services, docks, and hotels did not prove as remunerative in the later year, with the result that the net revenue, namely, the sum available for payment of interest on capital, was only £35,700,000 in 1936, contrasted with £45,600,000 in 1923, or 3·27 per cent. expressed as return on capital in place of 4·40 per cent. The results for 1937, when available, should show considerable improvement on 1936.

The following table has been designed to show the outstanding characteristics of the British railway position in 1936:

British Main Line Railways in 1936

Total capital expenditure = £1,160 millions.
Capital expenditure on rlys. = £971·2 millions.
Route mileage = 19,218 (611 electrified).
Track mileage including sidings = 50,701.
Passenger carriages = 42,652, giving 2,486,000 seats.
Restaurant and kitchen cars = 821.
Sleeping cars = 373.
Number of wagons = 618,948, with an average capacity of 11·86 tons.
Receipts from passengers = £54 millions.
Receipts from freight = £87·7 millions.
Gross railway receipts = £159·3 millions.
Expenditure = £126·7 millions.
Average receipt per passenger mile = 0·67*d.* (latest available).
Per ton mile = 1·3*d.*
Total number of passengers = 1,173 millions.
Tons of freight = 280·7 millions.
Average length of journey per passenger = 16·7 miles.
Per ton of freight = About 58 miles.
Number of passengers killed = 3 } in train accidents.
Number of passengers injured = 458 }
Number of employees = 559,356 (March 1936).
Average weekly earnings of clerical staff = 92*s.* to 93*s.*
And of operating and engineering staff = 64*s.* 5*d.* to 66*s.*

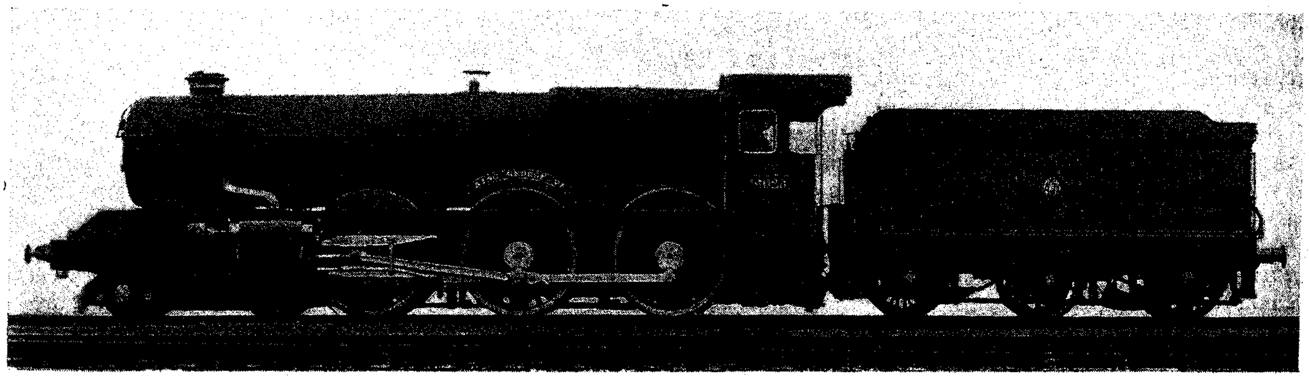
Permanent Way or Track.—Consistent progress has been made during ten years in the renewal of running lines in accordance with the standards decided upon after the amalgamations of 1923. Recent and noteworthy developments include the use of a two-bolt fishplate in place of the much more expensive and heavier four-bolt fishplate; the employment of rail lubricators to lessen wear on curves, the careful attention to the super-elevation on approaches to curves to ensure high-speed running with comfort, and the building up of worn crossings by means of welding. The London & North Eastern railway has made experiments with long rails of 120ft. and the Southern railway has laid, in certain tunnels, rails of 180ft., formed by welding three standard 60-ft. rails together.



RAILWAY PROGRESS DEMONSTRATED BY THREE L.M.S. ENGINES: LEFT, THE 'LION' 1837; CENTRE, THE 'CORONATION' BUILT IN 1911 TO CELEBRATE THE CORONATION OF GEORGE V AND QUEEN MARY, AND RIGHT, THE 'CORONATION' STREAMLINED EXPRESS, BUILT TO COMMEMORATE THE CROWNING OF KING GEORGE VI AND QUEEN ELIZABETH

Rolling Stock.—The tendency in passenger coaches has been to employ steel more extensively both in strengthening the underframe and the vestibules; it is also used for the elliptical roofs and for the thin external panels. Of a modern British carriage which weighs about 30 to 32 tons, approximately 75 per cent. to 80 per cent. is steel. All coaches constructed since 1907 are now electrically lighted, and electricity is used for cooking in the London & North Eastern railway restaurant cars. Mass-production methods are employed for locomotive, carriage, and wagon building. Concentration has been made on the production of standard-type locomotives, but amongst new designs may be mentioned the London Midland & Scottish railway's *Princess*, Pacific-type class, the streamlined 3-cylinder *Pacific* and the 'Mikado' type *Cock o' the North* engines on the London & North Eastern, the very efficient 'Castle' class on the Great Western railway, and the successful 'Schools' class 4-4-0 type on the Southern railway.

Organization.—Legislation in 1928 permitted the railways to acquire a financial interest in road operating concerns, and about £9 millions has been invested in omnibus companies and well over £2 millions in cartage companies, for instance, Pickfords and Carter, Paterson. All railway receipts from competitive sources are now pooled, and, in addition, all passenger receipts in the London area are pooled with the London Passenger Transport Board. There has been a steady downward trend in the general level of railway charges owing to the grant of additional



Great Western Railway]

KING GEORGE VI LOCOMOTIVE—LATEST IN THIS TYPE, 1937 exceptional rates and reduced fare facilities, but an increase of about 5 per cent. took place in Oct. 1937, after permission was granted by the Railway Rates Tribunal. The only important exceptions to this increase were fares in the London area and charges for very short distances.

France.—The year 1937 will prove outstanding in French railway history because of the decree of Aug. 31 which provided for the formation of the French National railway company as from Jan. 1, 1938. This new company is an amalgamation of all the main-line railways, both the company owned and operated Est, Nord, Paris Lyon et Mediterranée, Paris à Orléans and Midi systems, as well as the two State owned and operated railways known as the État and the Alsace & Lorraine. The French government holds 51 per cent. of the shares of the new concern, which has a capital of 1,419,412,000 francs, but the companies still exist and remain in control of their so-called *domaines privés*, and their leases, which would have terminated at varying dates between 1950 and 1960, have thus been concluded. The board of the National railway will consist of 33 members until 1955, after which the number will fall to 27; the State nominees form the majority of the board.

Energetic steps, including the raising of fares and freight rates, were taken to reduce the long-growing deficit which had accumulated to over 26 million francs by the end of 1936. Technically, the French railways are well to the front, both in regard to rolling stock, permanent way, and signalling, whilst a special characteristic has been the rapidly extending use of railcars, some of a very high-speed nature, which total over 500 units. The main line from Paris (Montparnasse) to Le Mans was electrified in June 1937, as was later in the year the important suburban line from Paris (Luxembourg) to Massy-Palaiseau. The work of M. Chapelon of the P.O., in improving steam-locomotive design and efficiency, has placed France in the van of progress in traction matters, and the P.L.M. has acquired one of the largest diesel locomotive units in Europe.

Germany.—Early in 1937, an important change in the organization of the German railways was announced with the appointment of Dr. Julius Dorpmüller, the general manager, as minister of transport. Whereas all methods of transport now come under the direct control of this minister, the new organization ensures that there is a high degree of co-ordination between the rail, road, water, and air services. Since the construction of the *Reichsautobahnen*, or motorways, has been entrusted to officers of the German railways, and the motorways are used extensively by German railway fast buses and lorries, the centralization of direction has been carried much further than in other countries. The welcome recovery in trade and industry has enabled the German railways to continue on a large scale its programme of improvements covering both the operating and technical departments, and the financial results for 1937 will show a more satisfactory position than in 1936, when the ratio of operating expenditure to gross receipts stood at 88 per cent., and 95½ per cent. in 1935. Accelerated passenger and freight services may be regarded as the keynote of German railway progress during recent years.

Holland.—High-speed diesel trains are now operating extensively between Amsterdam, Utrecht, Rotterdam, and Eindhoven, whilst the Utrecht, Amsterdam, Rotterdam triangle is being converted to electric traction.

Italy.—Extension of electric traction proved the outstanding feature of State railway progress in 1937; specific mention may be made of the section from Naples to Reggio. New streamlined diesel and electric trains were placed in service, permitting many services, such as Bologna, Florence, Rome, and Naples, to be accelerated. Improvement was also effected in reducing the annual financial deficit of preceding years.

Scandinavia.—Of vital importance to the Danish State railways was the opening of the Storstroem bridge in Sept. 1937, 10,535ft. long, the largest over-water bridge in Europe, following, as it did, the completion of the Little Belt bridge, 3,865ft. long in 1935. A third big bridge, the Oddesund, about 1,650ft., is to be opened in 1938. These bridges, together with the use of high-speed diesel trains of three or four cars, have improved internal and international railway services in Denmark, and brought that country to the forefront in the matter of railway speeds.

In Sweden, the 812-mile Inland Line from Kristinehamn northwards to Gällivare was in 1937 opened throughout by the State railways, and conversion to electric traction still goes on steadily, the latest sections under conversion or planned being between Ånge, Storlien, and Boden, and from Gothenburg to the Norwegian border. Norway is still among the few countries constructing main-line railways.

Asia.—In India, probably the most important event in 1937 has been the Report of the Indian Railway Inquiry Committee recommending various changes in the policies to be adopted in regard to railways and their relationship to the finances of the central government. The financial results for 1936 proved more satisfactory than was originally anticipated, but the future must depend primarily on the extent to which the competing road services are brought under regulation. India and Ceylon are making experiments with diesel traction which has already been proved satisfactory in Siam. The Burma railway system is now separated from the control of the Indian Railway Board.

Four decades' work of planning and railway construction in Indo-China has resulted in the completion of the Saigon-Hanoi line of 1,100 miles. In China, itself, and Japan, as well as in south Manchuria, railway progress has been temporarily stayed by unsettled political conditions, but the ex-Chinese Eastern railway has been converted to standard gauge from the wider Russian gauge.

A further link, namely, from Nisibin to Tel Kotchek, has been completed in the line planned to connect the Iraq and Turkish State railways.

Steady progress is being made with the Iranian railway commencing at Bundar Gaz on the Caspian Sea, and destined to reach the Persian Gulf at Bundar Shapour via Teheran and Hamadan. There is also a railway on the Russian gauge from Erevan to Tabriz. The Soviet railways in Asia have been extended, and much mileage has been doubled.

Africa.—The Egyptian State railways have placed in service several diesel railcars, notably on the new direct line between Cairo and Suez, also between Cairo and Port Said, and Cairo and Helwan. A new branch line was completed in record time, stretching westward to Mersa Matruh near the Libyan border. Air-conditioning is being tried, both on the Egyptian and Sudanese railways.

In West Africa, the Gold Coast and Sierra Leone government railways have achieved better financial results through trade recovery, particularly in cocoa, palm kernels, and ore. The new French line has been opened to Brazzaville. The Benguela railway was completed throughout in 1931, thus opening up a new route between the Atlantic Ocean and Central Africa.

In East Africa, the Kenya and Uganda railways have benefited from good traffics and economical operation. The most notable event of recent years was the completion of the Zambesi bridge in 1934, thereby connecting Nyasaland with Beira and avoiding ferry services at Chindio. The bridge itself, 12,064ft. long, cost about £1,400,000, but the approaches more than double this figure. The neighbouring Rhodesia and Mashonaland railways have been passing through a prosperous period.

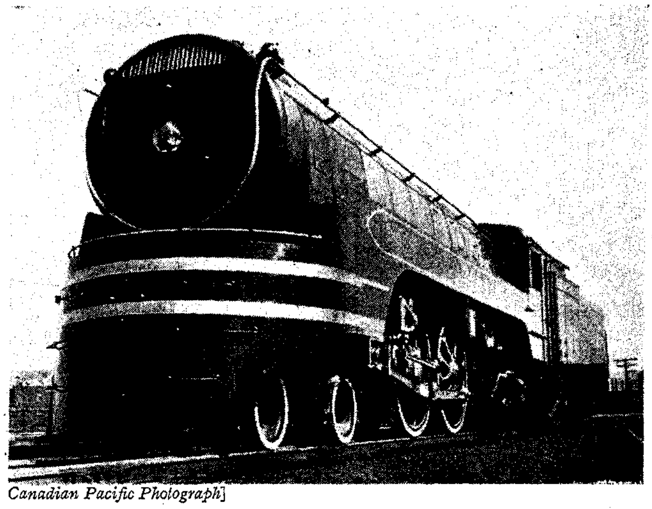
The prosperity of the South African Railways and Harbours administration during the years 1935–37 has been phenomenal, and rolling stock has had to be ordered and built in large quantities to carry the heavy traffic offering. A total of 559 route miles, or 1,064 track miles, will be operated by electric traction in 1938. The financial surplus obtained has made possible large reductions in the deficits of various pension and superannuation funds, the writing off of accrued depreciation on rolling stock, reduction of capital cost of unremunerative branch lines, and the establishment of funds to equalize rates and stabilize wages.

Australasia.—In South Australia, a new line was opened by the Commonwealth railways between Port Augusta and Port Pirie, thereby eliminating the break of gauge at Terowie, and reducing materially the journey time between Adelaide and Western Australia. In Victoria, the new *Spirit of Progress*, an all-metal air-conditioned train, has set a new standard in comfort as well as providing an accelerated service from Melbourne to Albury on the New South Wales border. New South Wales is making experiments with diesel traction on the Broken Hill and other lines, whilst in all the States, trade recovery has enabled the railways to earn a much more satisfactory return on the capital invested in the systems; for instance, in the case of the New South Wales railways, it was 3¾ per cent., and for the Queensland railways 4¼ per cent. in 1936–37.

In New Zealand, railway progress has been particularly noteworthy. Internal-combustion engined railcars have been found very satisfactory on light traffic lines, the new station at Wellington provides many unique features, and, together with the adjoining improvements, such as marshalling yards and engine sheds, constructed on land reclaimed from the sea, involved an expenditure of about £3 millions. A number of important new links connecting the various sections of line, for instance, from Napier to Putorino, and new Pacific-type locomotives have enabled considerable improvements to be effected in the train services. (C. E. R. S.)

North America.—In the main operating features of the railways of the North American continent the year 1937 witnessed further substitution of modern streamline equipment for locomotives and cars of conventional design. The development of the diesel locomotive has been matched by further improvements in steam locomotives, and some of the railways are meeting the popular demand for modernity by converting steam locomotives into streamline design. In general the trend towards higher speeds, both in the freight and passenger services, and further improvements in quality of service have continued, and the design of passenger cars is along lines of more comfort, convenience, and beauty.

Canada.—For the period 1937–38, approximately $38 millions was spent on new rolling stock by the two great railway systems which between them control about 90 per cent. of Canadian railway mileage. The Canadian National railway ordered 3,000 steel box cars, 400 gondola cars, 400 freight cars, 200 automobile cars, and 50 air-conditioned first-class passenger coaches. Twenty Jubilee type locomotives were also ordered. The Canadian Pacific railway order was of a similar nature, comprising 3,600 units. Air-conditioning was extended throughout all classes of passenger equipment, and 30 new engines of light streamlined type added. Strikes accompanied the demands of the railwaymen for the restoration of the 10 per cent. wage cut of 1931. The concessions made by the employers sought to adjust matters on a sliding scale. Thus the adjustment made by the C.N.R. aimed at reaching on April 1st, 1938, a wage level equal to the pre-depression high rate. Actual wages exceeded by more than $5 millions those of 1936.



Canadian Pacific Photograph]

CANADIAN PACIFIC SEMI-STREAMLINE LOCOMOTIVE

The construction of new railway mileage in 1937 was small, but 36 miles (Sonneterre–Val d'Or) of the C.N.R. line connecting the Northern Quebec goldfields were opened on Nov. 1st, 1937.

Tables I and II give a summary of railway travel statistics and expenditures for 1936 and 1937.

TABLE I

	All Railways		C.N.R.		C.P.R.	
	1937	1936	1937	1936	1937	1936
Average passenger journey per mile . .	87·1	85·3	78·7	74·1	100·0	98·7
Average length of travel (in miles) . .	306·6	309·9	349·1	376·9	388·7	369·7
Average tons per freight car per mile . .	24·7	24·5	24·2	24·9	26·5	25·9
Average passengers carried per train mile .	41·8	39·6	40·8	38·2	37·0	36·4

TABLE II

	Jan.-Nov.	
	1937	1936
C.N.R.:		
Gross revenue . . .	$182,177,183	$132,999,842
Operating income . .	$8,313,646	$4,968,558
C.P.R.:		
Gross revenue . . .	$132,999,842	$126,318,081
Operating income . .	$20,816,881	$19,769,303

United States.—The railroad year 1937 in the United States was one in which eight months of steady improvement in earnings and hopeful outlook were followed by four months of sharply declining traffic and apprehension. On the expense side the situation was affected adversely by nation-wide wage increases, the result of negotiations between the railroads as a whole and the labour unions collectively. On the basis of the number of employees in service the wage increases added about $130 millions, or nearly 7 per cent., to the annual wage payments.

During the early part of the depression the Interstate Commerce Commission had granted, for a limited period, what were known as emergency surcharges. From time to time the period in which such surcharges could be made was extended ; but at the close of 1936 the Commission decided that an emergency no longer existed and the surcharges, with their annual additional revenues of $120 millions (about 3·6 per cent.), were withdrawn. Shortly thereafter the railroads appealed to the Commission to restore permanently a part of the emergency rates, and in the following spring and autumn (1937) the Commission authorized increases estimated to yield $50 millions (about 1·5 per cent.) yearly. By that time the recession had set in, certain wage increases had been granted, others were pending, the prices of fuel and other materials and supplies had advanced, and the Commission in considering and granting the petition in part virtually invited the railroads to come back for more. The implied invitation was immediately accepted, and in November the railroads petitioned for authority to increase freight rates about 15 per cent. and, in certain sections of the country, to advance the rate for passengers in coaches from 2 cents to 2½ cents per mile. The hearings began in Dec. 1937: the decision was expected in Feb. 1938. If granted in full, the additional revenues will probably just about cover the higher costs of labour and materials.

At the beginning of 1937, 93 railroad companies, operating about 30 per cent. of the total mileage, were in receivership or were operated by trustees. Three additional companies were added during 1937. Amendments to the Bankruptcy Act in 1933 and 1935 were intended to expedite railroad reorganization. They have not accomplished their prime purpose, but considerable progress has been made. The outlook at the close of 1937, however, was that the reorganization plans then under consideration would require revision to take account of reductions in prospective earnings, and that several other railroad companies which have been close to bankruptcy will be forced into it unless business conditions improve and rate increases are granted.

Railroad gross revenues reached their peak in 1929, when, for class I roads (those earning $1 million or more) they were $6,280 millions. In 1933, the worst year of the depression, they fell to $3,095 millions. By 1936, they had rebounded to $4,053 millions. If in 1937 the revenues in the second half had been as good as they were in the first half, the total for the year would have been about $4,515 millions, but because of the slump in the second half they will be but little better than in 1936.

The relationship between net railway operating income and the investment in road and equipment (expressed as ' per cent. return on investment ') is a significant indication of earning power. In 1929 it was 4·81 per cent. ; in 1934 it was 1·78 per cent. ; and in 1936 it was 2·57 per cent. During the first nine months of 1937 it was at the annual rate of 2·47 per cent. and for the full year it will be somewhat less. Considering all railroads collectively as a single system the income available for interest and other fixed charges will be but slightly in excess of those charges and practically nothing will be left for the stockholders.

A major problem the United States railroads have to face to-day is the competition from road transport, from the rejuvenated inland waterways, and from the rapidly developing aeroplane services, this having left them with facilities and equipment which are not used or useful. A brighter side of the situation is found in the new spirit of the railroad executives. They are showing more resourcefulness in modernizing their sales and operating policies, and in improving their public relations. There is evidence that the competitive peak of highway transport has been passed, as the trucks and the buses are now being subjected to regulation in some degree equivalent to that imposed upon railroads. (X.)

Notable Runs.—The outstanding feature of railway progress since 1930, in spite of the world trade depression, has been the rapid advance in speed throughout the United States and western Europe. The German railway with its *Flying Hamburger* and the American railways with their *Union Pacific* and *Burlington Zephyr* streamlined trains of 1933 may claim to be the pioneers, but, whilst many of these and succeeding trains have achieved world fame, the general speeding up of large numbers of important passenger and freight trains is of even greater social importance. The period 1933–38 will definitely be regarded as a landmark in the realm of railway acceleration. The aim of many American and European railways is to bring the level of their express train speeds up to 60m.p.h., unless the distance between station stops is too short to permit of adequate acceleration and braking.

To achieve the highest inter-station speeds now regularly scheduled, most of the world's fastest trains are strictly limited in weight and, consequently, in carrying capacity. Any table designed to show the world's highest-speed railway runs must necessarily become rapidly out of date, as timetable changes are usually made twice yearly. Many such trains only run on certain days of the week, others run in the summer only, most of them are streamlined in varying degrees, and many of the fastest use the diesel engine as the source of traction. In continental Europe some of these trains consist of one, two, or three cars only, and, therefore, are strictly limited in their number of seats.

The following table gives data as to certain of the fastest trains in the world operated regularly during 1937. Many railways impose strict limits as to the maximum speeds to be attained. The British railways are an exception to this rule, speed limits being imposed only at certain places. To obtain a throughout average speed of, say, 70m.p.h., it may be necessary to run several miles at any speed between 80 and 100m.p.h. In contrast to these regular runs, ultra-high speeds have occasionally been obtained on test runs, for instance, 124m.p.h. by a steam-hauled train between Berlin and Hamburg in 1936 and 113m.p.h. by the London & North-Eastern railway and London Midland & Scottish railway in 1936 and 1937 respectively.

How greatly the railways of the United States have outstripped European railways in speed achievements since 1933 may be seen from the following tabulation :

Approximate Daily Mileage of Railway Runs at High Speeds

	70 m.p.h. and over	60 m.p.h. and over
Belgium	—	839
Denmark	—	741
France	2,016	14,678
Germany	1,504	8,235
Great Britain	730	11,038
Italy	131	1,317
United States	3,194	37,860

(C. E. R. S.)

RAJPUTANA. This great circle of ancient Rajput kingdoms occupies the heart of northern India. It is a land of stately and picturesque cities dotted about an arid desert and inhabited by people with martial traditions and an immense pride of race. The area is 132,618sq.m. and the population 11,512,914, of whom nearly 90 per cent. are Hindus. The largest cities are Jaipur (pop. 144,179), Jodhpur (94,736), and Bikaner (85,927). The dominant language is Rajasthani, with a sprinkling of Western Hindi and Bhili. The premier Rajput State, as all the others admit, is Udaipur (ruler, Maharana Sir Bhupal Singh, with a 19-gun salute); but there are nearly 20 others with historic names. The chief of them, after Udaipur, are Jaipur (Maharaja Sir Man Singh, 17 guns); Jodhpur (Maharaja Sir Umed Singh, 17 guns); Bundi (Maharao Raja Ishwari Singh, 17 guns); Bikaner (Maharaja Sir Ganga Singh, 17 guns); and Kotah (Maharao Sir Umed Singhji, 17 guns). The chief event of progress in recent years is the reclamation of a large desert area in Bikaner by a costly irrigation scheme.

The agent has his headquarters at Mount Abu, and is also chief commissioner of Ajmer-Merwara.

RAS DESTA, Ethiopian chief; died Feb. 24, 1937. During the Italian invasion of Ethiopia, Ras Desta commanded the forces of Sidamo and Galla Borana provinces, and was for long a thorn in the flesh to General Graziani in the south. His death by shooting followed his capture by the Italians, after he had maintained, for as long as possible, a guerrilla warfare against his country's conquerors. Ras Desta was Haile Selassie's brother-in-law, having married the emperor's sister, Princess Temañe Work.

RAVEL, MAURICE, French musical composer; born at Ciboure, Basses-Pyrénées, March 7, 1875; died in Paris, Dec. 28, 1937. A biography, with an account of his work, may be found in the *Ency. Brit.*, vol. 18, p. 997. To the lay listener, Ravel was known chiefly by his *Bolero*. He produced little work during the last four or five years of his life, since his health deteriorated as the result of a motor accident. In 1924, he became director of the Conservatoire Américaine at Fontainebleau.

RAYON. Under the rules promulgated by the Federal Trade Commission of the United States of America, and coming into operation in Oct. 1937, rayon is defined as a ' manufactured textile fibre or yarn produced chemically from cellulose or with a cellulose base, and for thread strands or fabric made therefrom, regardless of whether such fibre or yarn be made under the viscose, acetate, cuprammonium, nitrocellulose or other process '. This definition is modified to some extent in some countries, but as all man-made continuous filament textile threads sold on a commercial scale are produced by one or other of the four processes mentioned, the definition may be taken as substantially correct for all nations.

Research.—The improvements effected in rayon during recent years are amazing, but it is not claimed even yet that the ideal textile fibre has been produced. The main objects of research to-day are to give it the warmth of wool or silk, and the strength of cotton, as well as to improve its elasticity and to combat the tendency to crease. Rayon is now being made of a finer denier per filament than that of silk, and one type at least has been produced which is as strong as cotton. In Great Britain, one company is making elastic threads on its machinery. Three-quarters of the rayon produced goes into woven fabrics, just as three-quarters of the world's raw silk is used for hosiery, and rayon is now being used for the casings of motor tyres. Further, it was a rayon sail which helped the *Ranger* to win the race for America's Cup. A special form of rayon influencing the whole of the textile trade is staple fibre, a yarn spun from short lengths of the continuous filament rayon, which has made rapid progress, as a substitute for, and in conjunction with, cotton and wool, and for producing speciality yarns and fabrics.

The raw material for rayon production has up to now been cellulose, but recent attempts to use as alternatives organic polymerization products are important. The use of casein for textile threads is not new, but the process has only recently been developed commercially. The estimated production of the Italian product, *lanital*, the chief type of casein yarn, for the 12 months ending Dec. 31, 1937, is 2 million kilos, and the production rights have been acquired for the United States, Great Britain, and other countries. From it, every class of fabric, from the flimsiest knitwear to heavy overcoatings, is made. In Great Britain, casein filaments which, when woven, give fabrics similar in ' feel ', warmth, and appearance to those made of natural silk, have been produced; and in Sept. 1937, the U.S. Department of Agriculture applied for patents covering the manufacture of artificial textiles from casein for ' the full use of the people of the United States '.

World Production.—The estimated world production of rayon in 1937 is 1,110 million lb. compared with 1,015 million lb. in 1936. The estimated production of rayon and staple fibre in the principal producing countries is:

	Rayon (in 1,000lb.)		Staple fibre (1,000lb.)	
	1936	1937	1936	1937
JAPAN	277,000	320,000	45,800	130,000
UNITED STATES	277,625	300,000	12,400	17,500
GREAT BRITAIN	116,800	120,000	26,200	29,000
GERMANY	105,000	117,000	85,000	150,000
ITALY	87,000	97,000	110,480	160,000

Although Japan holds the lead in rayon, she has been over-producing, and at the end of 1937 had a piled-up stock of over 40 million lb. of yarn. A drastic scheme of production curtailment is now in force.

Among recent plans for new rayon-producing plants is an important one promulgated by Anglo-American interests for a factory in the Argentine to employ 1,000 operatives and produce 2½ million lb. of yarn a year, *i.e.* more than half of Argentina's present importation.

In Canada, the efficient production of rayon has placed that country first among exporters of woven rayons to Great Britain. (W. Hu.)

REARMAMENT, BRITISH. After the World War the British forces were rapidly reduced, and the country returned to the traditional system of voluntary enlistment. The army was brought back to less than its pre-war size, which had naturally been much smaller than the conscript armies of the Continent. The air force, which had been built up to the highest level of any by the end of the war, was reduced to a skeleton—from 185 squadrons to 28, of which only three were available for the defence of the home country. With the Washington Treaty Britain gave up her long-standing claim to predominance on the seas, and agreed to a condition of parity with the next strongest naval power. But in 1923 a state of tension developed with Britain's former allies, when the French marched into the Ruhr. The British, making plain their dislike of this peacetime invasion of German territory, felt a strong sense of personal discomfort when they awoke to the fact that a considerable part of France's 126 air squadrons were assembled within reach of their own coast.

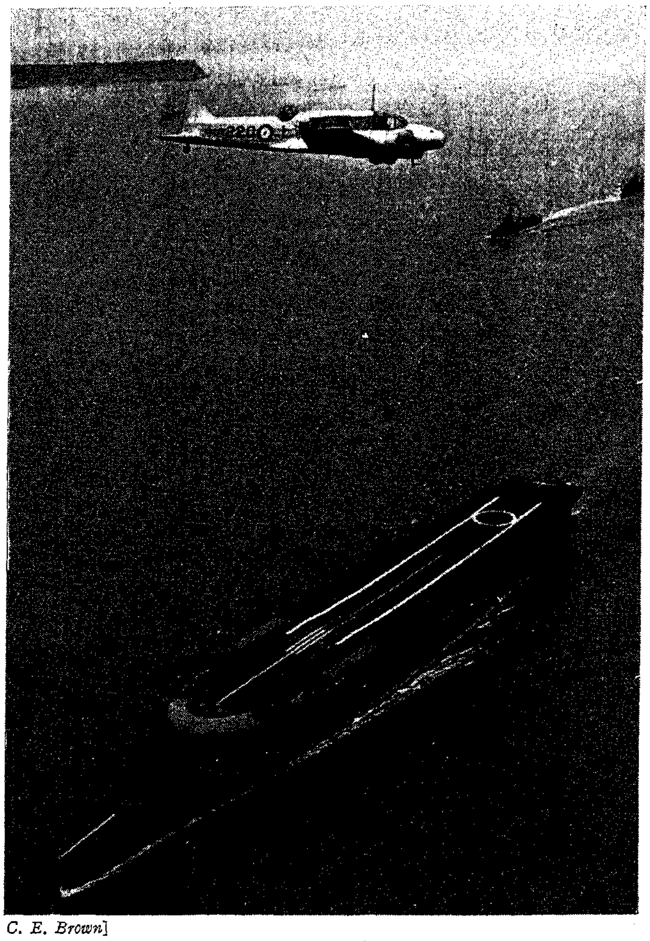
The outcome was the announcement by Mr. Baldwin in 1923 that, apart from overseas requirements, British air power must include a home-defence force of sufficient strength adequately to protect us against air attack by the strongest air force within striking distance of this country. He stated that the force was to consist of 52 squadrons, to be created as quickly as possible. The expansion started promptly, but was checked in 1926 when still a long way from completion. Three years later the official spokesman of the air ministry disclosed to Parliament that Britain had sunk to fifth place among the world's air Powers. Yet the incomplete programme was again suspended, first to meet the economic crisis, and then to meet the hopes of a general limitation raised by the Disarmament Conference which assembled in 1932. During these years all service expenditure had been steadily pared down.

The strengthening and re-equipment of the British defences continued to be postponed so long as some hope, if a diminishing hope, hung on the Disarmament Conference—although well before this the Continental powers and Japan had obviously begun rearmament. The pace of this quickened with the advent of the Nazi government in Germany and its unconcealed measures. Eventually the British government took account of the danger, and made a detailed examination of the state of their own forces. The immediate result of this inquiry was that in July 1934 the government adopted a five-year programme for increasing the air force, and raising the home defence part of it to 75 squadrons. They were soon led to quicken their step, and shorten the time of their programme, owing to evidence of Germany's rapid development in the air and the expansion of other air forces. Ground defences against air attacks were also increased. Two Territorial infantry divisions were converted into anti-aircraft troops, to man a long belt of defence running from the south coast up the east coast, so that it would cover the north-country industrial areas as well as London. A research committee of scientists was also formed to study new means of countering attacks. At the same time that this immediate defence of Great Britain was thus taken in hand, extra money was provided for beginning the modernization of the army and navy.

The new programme had barely been decided when a new series of shocks caused its upward revision. In March 1935 Germany announced her reintroduction of conscription and the formation of an army 50 per cent. larger than the French. It was followed by Hitler's intimation, to the British ministers who had gone over to Berlin for friendly negotiations, that Germany already possessed parity in the air with Britain and was aiming at parity with France—which meant a superiority to the prospective British air force. If there was some doubt about this first assertion, his second was plain. The sequel was that in May 1935 the British government decided to raise its own intended air strength by 50 squadrons, and to have a home defence of 1,500 first-line machines within the next two years. This involved the training of 2,500 new pilots as well as of 20,000 other personnel. Although still hoping for any agreed limitation, the British government was no longer content to let preparedness wait on hope.

The process of expansion suffered some disturbance from the international crisis caused by Italy's invasion of Abyssinia. The emergency reinforcement of the forces in the Mediterranean was a severe drain on home resources, which emphasized the consequences of past neglect and revealed defects in the planning. After a vigorous campaign initiated in *The Times* which found wide support, the government yielded to the weight of public opinion, and in March 1936 appointed a minister for the co-ordination of defence, who would act as the prime minister's deputy on the Committee of Imperial Defence, preside when necessary at the meetings of the chiefs of staff of the three services, and would also be in supreme charge of the supply organization and industrial planning. This was a step forward, if it did not go as far as many thought desirable.

Sub-committees have been set up to deal with the different items of munition supply, with the provision of raw material and its manufacture, with man-power, food-supply, and grain storage, as well as with such questions as the protection of merchant shipping, the development of anti-aircraft defence, and precautions for the protection for the civilian population in air raids. A detailed survey has been made of the industrial field, to examine and clarify the material, operative, and technical resources of the country. Hundreds of engineering firms have been inspected to see whether their plant is adaptable to munition production in war-time. Production for present needs, however, has been delayed by lack of the necessary machine-tools and gauges.



C. E. Brown]

THE AIRCRAFT CARRIER 'FURIOUS' ON HER WAY TO PORT DURING A COMBINED COASTAL DEFENCE EXERCISE. ABOVE FLIES A RECONNAISSANCE AIRCRAFT

With the air force the interruption caused by the Mediterranean emergency was soon overcome, if not overtaken. The production of new types of machines, of much higher performance and greater range, has been speeded up so much that they are being delivered long before the date originally contemplated. The intended strength of the force at home has also been raised to 1,750 first-line aircraft, exclusive of the Fleet air arm. The creation of the new squadrons, however, has been slower. Of the 72 which were to be raised by the end of March 1937—to make a home defence total of 123—only about 26 were complete by that time, with a further 22 formed on a one-flight basis. The remainder were formed, but not yet at full strength, by the end of the year.

With the navy, which had a relatively lesser problem, the rate of construction was quickened to the extent that some of the new ships had been ready nearly half a year earlier than the scheduled time. Three of the new class of 9,000-ton cruisers are now completed and three more are expected to be ready within the next year: they have a speed of 32 knots and an armament of twelve 6-in. guns, as well as eight 4-in. anti-aircraft guns.

Similar progress is being made with the building of destroyers. Two new 34,000-ton battleships were laid down in Jan. 1937, and three more have been authorized. Five large aircraft carriers are building. And the completion of the Singapore base has been hastened, so that by the end of 1937 it was sufficiently advanced to be ready for emergency use. Early in 1936 the government decided to raise the cruiser strength from 50 to 70—the number which has for years been claimed as a necessary minimum by those directly concerned with the defence of the sea-communications: in 1914 there were 125 cruisers, new and old, available.

The situation is less comforting in regard to the deficiencies of the army. The belated official acceptance of modernization and mechanization caught its munition plants in a state of inadequacy for large-scale production, and a shortage of skilled labour aggravated the difficulty. While the motorization of its transport has made good progress, and light tanks have been coming through in rising numbers, only a trickle of the new anti-tank guns, light machine-guns, and anti-aircraft guns appeared in 1937. But production has been accelerated by the more vigorous impetus recently given to the War Office machine since Mr. Hore-Belisha became Secretary of State for War.

(B. H. L. H.)

RECLAMATION. During recent years the increased capacity and effectiveness of dredgers and other power machinery has made possible some reclamations from the sea which without such aids would have been impractical and in some cases impossible. By the use of centrifugal pumps, water in which sand, and even much coarser material, is suspended can be forced through large pipes to a considerable distance with a great saving of time and of labour costs. Land so reclaimed may be used for the creation of docks and harbours, for industrial sites, or for agriculture.

Modern drainage systems and the obverse, irrigation, have also made available marsh and waste lands in many parts of the world.

In Great Britain, one of the most important reclamation works, the Southampton Docks Extension Scheme, has resulted in the construction of a quay wall, nearly 1½m. long, alongside which eight large modern liners can be berthed. Beyond the quay-wall is the new King George V graving dock, in which the largest vessel can be dry-docked. The site, of an area of 408 acres, was reclaimed from a tidal bay of the river Test. Before reclamation by dredging, the bay was a mudland, covered at high tide and bare at low tide. Where dredging was done for channels and banks the overlaying bed of soft clayey mud, from 8ft. to 15ft. thick, was taken out to sea; a stratum of gravel, below the mud, from 2ft. to 7ft. thick, was used for making banks and for concrete; the sand and sandy clays, below the gravel, were pumped from barges through pipe lines to the area reclaimed after that area had been divided into basins protected from tidal action.

The approach channel is about 2m. long and 600ft. wide, with turning basins at each end of the quay wall; its depth is 35ft. below low water, but alongside the quay-wall the berths are 40 to 45ft. below low-water level. In the dredging of this channel 20 million tons of material were removed. The whole scheme makes provision for an additional dry-dock and for a jetty parallel to the new quay which will berth 12 liners. The reclaimed land is being used for docks accessories and for new factories and depots.

Several schemes have also been suggested for the reclamation of marsh lands for agriculture and of other unproductive land for afforestation. Whilst such reclamations are often made on a small scale, notably in the Fen districts (*see* IRRIGATION), it seems unlikely that in Great Britain reclamations of large tracts of land will be economically justified unless they are subsidized by public funds as relief work for the unemployed.

In the Netherlands, although in the great work of reclamation of the Zuyder Zee, the north-western section (the Wieringer Meer Polder) has already been converted into fertile land, with roads, bridges, canals, and villages, the work on the other sections has been held up for financial reasons.

It has now been decided to reclaim the north-eastern polder of what is now the Ysselmeer. The dyking and drainage of the polder is estimated to take about five years, and another ten years will be required for the completion of the work. The surface of the land reclaimed will be 119,000 acres and the total cost of draining will be about £18 millions.

For a very long period the west coast of Schleswig-Holstein in Germany has been subsiding, and large areas of arable land have been lost. A 10-year plan for the reclamation of a part of this lost area is now in operation; this plan includes a total area of about 1,250,000 acres, half of which is fertile marsh land, above mean water level, which only requires drainage and protection from storm; the greater part of the remainder consists of silt and sand between high- and low-water levels. These submerged portions are divided into large areas which are enclosed by stone-pitched dams, smaller enclosures are formed within these protected areas, and the silt, which has been deposited in a system of drains, is collected between tides and shovelled on to the land, making it fertile.

The Salonika Plain in Greece, some 500sq.m. in area, was at one time a part of the Gulf of Salonika; in the course of centuries, the plain has been nearly filled by the alluvial deposits of rivers, leaving a shallow lake, known as Lake Genista, which in recent years had become an almost impenetrable mass of reeds. The work of reclamation included the diversion of the river Axios and the systematic draining of the plain. By the diversion of the river, the Athens–Salonika railway has been protected and the delta of the river prevented from extending into the sea so far as to cut off the Port of Salonika. About 108,000 acres of land have been drained and a further 198,000 acres protected from floods. At Lake Copias, also in Greece, the reclamation by drainage of 60,000 acres has, amongst other benefits, brought a very considerable area of land into cultivation.

A very notable work of reclamation in the Far East has been the new Singapore civil airport, which was opened in June 1937, on a site reclaimed from a tidal swamp near the city. This swamp was covered with 6ft. of water at high tide, and at low tide there were extensive flats of soft mud which reached a depth of about 50ft. The whole area was bunded off in blocks, varying from 10 to 25 acres in extent. After the blocks had been pumped dry, they were filled with layers of material from the hills, each layer being consolidated by the use of roller-tractors before the next layer was laid. In this way a very stable basis was obtained well above the tide level; the aerodrome portion was afterwards covered with fertile soil on which grass was planted. Slipways and an approach from the sea provide for seaplanes and flying boats. (J. Eu.)

In the United States the meaning of the term 'reclamation' has been restricted by usage so that its principal application now is to the reclamation of desert lands by irrigation. The United States Bureau of Reclamation, for example, deals solely with irrigation, and all its work is in the arid and semi-arid western one-third of the country. In 1937, the Bureau had under way its largest construction programme, including some 21 dams. The construction programme under way in 1938 will eventually result in the irrigation of 2,500,000 acres of land now dry and unproductive (*see* DAMS; IRRIGATION).

RED CROSS, the internationally recognized symbol of agencies in various countries for the relief of sufferers in war and in civil calamities (in Islamic countries replaced by the Red Crescent). Particularly it is the device of the International Red Cross, formed in Geneva in 1864 to organize aid to the sick and wounded in time of war, and the League of Red Cross Societies, with headquarters in Paris, which undertakes welfare work in peace time. National Red Cross Societies in most civilized countries are affiliated to these organizations, and in Great Britain the British Red Cross Society is also in liaison with the Home Office authorities and the Admiralty, War Office, and Air Ministry, as well as with the Order of St. John, the V.A.D. Council, etc., and the health services of the various local authorities. The British Red Cross Society is taking a prominent part in the campaign against rheumatism in Great Britain, and in 1936 at its clinics, 154,378 anti-rheumatic treatments were given, the provisional figure for 1937 being 145,592; 30,000 accident cases were dealt with during the year 1936–37, and on the day of the King's coronation, in May 1937, 944 officers and members on duty in London streets dealt with 1,428 casualties. Since 1935, the B.R.C., in common with the Order of St. John and the St. Andrew's Ambulance Association, have been training themselves and the public in the medical and anti-gas services that would be necessary in the event of air raids; they are now co-operating with the local authorities in the Air Raid Precautions Services, and up to the end of 1937 had passed 27,847 persons through their anti-gas training classes.

In the U.S.A., the American National Red Cross administered extensive relief operations in connexion with the Mississippi Valley floods of the spring of 1937, giving assistance to over a million persons. In the year 1936–37 a total expenditure of $25,985,000 was incurred by the American Red Cross in home and foreign relief work, and the society's national revenue amounted to $29,167,000 besides the revenues of its 3,700 local chapters.

The International Red Cross Commission announced in Jan. 1937 that 35 national societies had contributed £23,000 to the relief of suffering in connexion with the Spanish civil war, three-quarters of that sum having been received from South America; delegations were at work in various parts of Spain, concerned mainly with revictualling and the care of the child population.

REFERENDUM. Prominent among those to use the referendum in 1937 was Australia, on March 6. Under the Commonwealth Constitution's peculiar requirement that every amendment thereof must receive a majority in each State, as well as of the entire electorate, two proposals were defeated, although the second (authorizing the Commonwealth Parliament to regulate aviation) received a majority of the total vote. The new Irish Constitution was adopted on July 1 (686,042 to 528,296)—the first instance of such a referendum in the British Isles. The Swiss voters on Nov. 28 rejected a proposed constitutional amendment (sponsored by Fascists) excluding secret societies from exercising the right of free association (514,984 to 233,869). Bulgarians voted on the question of allowing goats to be kept. Brazil's new constitution, though dictated and proclaimed, provides for 'a national plebiscite' on future changes in case the chamber of deputies and the president fail to agree.

In the United States, the number of measures referred to voters in 1937, while fewer than in 1936 because fewer States held elections, was, nevertheless, considerable. In three southern States the liquor question was again referred. Alabama, on March 10, rejected the 'Beverage Control Act' by 100,474 votes to 98,051. In Georgia, the attempt to legalize liquor traffic was frustrated (103,097 to 94,575), on June 8. An advisory referendum on Sept. 23 in Tennessee yielded 103,276 to 36,839 against repeal of the Prohibition law. A similar proposal was defeated in Verona, N.J., by one vote.

Nineteen Indian tribes voted (for the most part favourably) on tribal constitutions and 28 on charters, at various dates.

On May 1, the women of the Philippines (by special authorization, and for the first time in the Far East) voted themselves the franchise by a majority of about 10 to 1.

REFORMED CHURCHES: *see* PRESBYTERIAN CHURCHES.

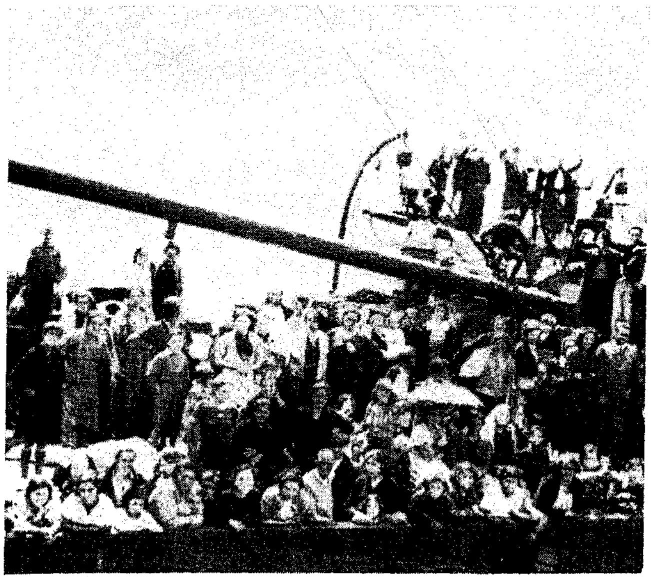
REFRIGERATION AND HOUSEHOLD REFRIGERATORS. Among the recent outstanding developments in refrigeration are the increased size of installations operated by completely automatic plants controlled by thermostats, and the development and use of 'Freon' (CCl_2F_2) as a safe refrigerant. 'Freon' is non-inflammable and non-toxic, but it is necessary to provide about 1·8 times the swept volume required by an ammonia compressor for a similar performance.

There has been a very great increase in the numbers of small refrigerators used for domestic and commercial purposes, and the appearance, reliability, and approach to silence in their operation have been greatly improved.

The cabinets are constructed with enamelled all-steel finish for the internal and external surfaces, and rounded corners; their shelving and fittings are carefully planned to give the utmost convenience in use.

In some of these small machines the electric motors are completely enclosed in the refrigerating circuit, which is hermetically sealed. This avoids all glands, and makes leakage of the refrigerant practically impossible.

In Great Britain, town gas is now used almost exclusively as the heating element for units working on the absorption system, and 'electric refrigeration', as a term, is descriptive of motor-driven compression units. (H. Wil.)



Wide World]

THE BRITISH STEAMER 'STANCROFT' REACHES NANTES WITH 1,850 REFUGEES FROM SANTANDER

Wide World]

REFUGEES FLEEING FROM THEIR HOMES IN TERUEL

REFUGEES. The 17th (1936) League Assembly appointed Judge Michael Hansson, as president of the governing body of the Nansen Office until Dec. 31, 1938, with the task of submitting a scheme for the liquidation of that Office (as decided by the 16th assembly under Soviet pressure) by that date and for the allocation of its tasks after liquidation. This report was submitted to the 18th assembly (*see* below). During the year the Office continued its work of settling Armenian refugees in Syria and Greece and refugees from the Saar in Paraguay.

The high commissioner for refugees (Jewish and other) from Germany (Major-General Sir Neil Malcolm) was instructed by the 17th assembly to prepare for the winding-up of the work of the High Commission by the end of 1938. A draft international convention on the status of refugees coming from Germany was drawn up and submitted to governments in March 1937. This combined the stipulations of the Provisional Agreement, between governments of July 1936, regarding such refugees, with the provisions of the convention on the international status of refugees opened for signature in Oct. 1933, which was designed to cover those refugees who fell within the sphere of the Nansen Office. The 18th assembly instructed the high commissioner to summon an inter-governmental conference early in 1938 for the adoption of a convention on refugees (and, if possible, stateless persons) coming from Germany.

The assembly considered the future of the work on behalf of the refugees, and confirmed its previous decision regarding the liquidation of the Nansen Office and the High Commission at the end of 1938. It recognized, however, the League's moral duty towards the refugees, and decided that the whole problem arising out of these decisions should be re-examined, and asked the Council to prepare a scheme of international assistance to refugees before the 1938 assembly.

BIBLIOGRAPHY.—*See* Report of the Secretary-General of the League of Nations; Minutes and Reports to the Sixth Committee of the League Assembly. (S. A. HE.)

War Refugees.—An outstanding problem of 1937 was the disposition of refugees of the Spanish civil war. In Dec. 1937, Republican Spain had 3 million, 1,800,000 government-maintained, the remainder either possessing private means or being incorporated into various industries. Forty thousand Asturians fled to Catalonia in the late summer; Catalonian refugees total 850,000. Children's colonies number 319, with 20,400 children. As alleviating measures, Great Britain took 3,840 Basque children, together with teachers and priests (by Dec., 300 had returned), Mexico took 500, the U.S.S.R. took 2,680 and other countries 2,900. Plans are under way for assistance to destitute refugees in Catalonia by the British, French, and other governments.

REGENCY ACT. On the accession of King George VI to the British throne in Dec. 1936, it became necessary to take steps to provide for a regency during the possible minority of the heir-presumptive. Advantage was taken of this fact to make good a slight defect that had become apparent during the illness of George V in 1928, *viz.* that there was no permanent provision for the carrying on of the royal function during the sovereign's sudden incapacity or absence abroad.

The terms of the Bill, which received the royal assent on March 19, 1937, and to which the Dominions had agreed, provided, therefore, that in the event of the demise of the crown during the minority (*i.e.* under 18 years) of the heir-apparent or presumptive, and during any period when the sovereign was declared to be incapacitated by infirmity of body or of mind, the next adult heir should be regent, and should perform all the state duties and functions of the sovereign, the domestic guardianship of an infant sovereign being reserved to his or her mother, if living. It also provided that the sovereign (or regent), in the event of illness or of absence from the United Kingdom, should delegate certain of the royal functions to counsellors of State, these to be the wife or husband of the sovereign and the four adults next in line of succession.

Should the necessity arise in the present circumstances, H.R.H. the Duke of Gloucester would be regent, and the counsellors of State, H.M. the Queen, the Dukes of Gloucester and Kent (the King's brothers), the Princess Royal (the King's sister), and Princess Arthur of Connaught (elder daughter of the late Princess Royal, sister of King George V). (L. H. D.)

RELIEF. The needs of the unemployed during 1937 continued to dominate the practice of relief in English-speaking countries as well as in the other industrialized nations of the world. In general, provision for the care of the unemployed is made by three methods: social insurance, public works or relief works, and home relief.

Great Britain employs social insurance; the United States, State by State, is beginning to do so; Canada, as yet, does not.

The British scheme, which has been in operation since 1911, covers most of the wage-earning population, including agricultural labourers, the latter group having been added to the classes of beneficiaries in 1936. In the United States, with the exception of Wisconsin, unemployment benefits had not begun to be paid, but the collection of premiums was in its second year, and employers in the covered industries had paid 2 per cent. of their wage expenditures into the Federal treasury. Coverage in the United States, however, is only about 45 per cent. of gainfully employed workers, owing to the many exemptions provided in the Federal law.

Public work and work relief continued to be relied upon in large measure for the care of the unemployed during 1937 throughout the English-speaking world. Although Great Britain has formally renounced the method, yet her extensive public improvement schemes, such as housing, are based largely on the need for jobs. The Works Progress Administration was the outstanding agency caring for the unemployed in the United States. During the year considerable public sentiment developed against it, and appropriations for it were reduced, but by December the government added 350,000 to its rolls in accordance with its announced plans at the time of the spring reductions. Somewhat over 2 million workers had been employed on WPA. projects in January, but this number had shrunk to 1,400,000 by September. At no time were all able-bodied dependent unemployed taken care of by work furnished by the Works Progress Administration. Special projects conducted by the Public Works Administration (a separate authority headed by the Secretary of the Interior) lend themselves less easily to tabulation, but they were, in general, of less immediate effect in coping with unemployment, and less money was available than for relief work under WPA. It should, however, be added that many competent authorities consider economically and socially real public works a sounder approach to the problem of the unemployed than work relief as promoted by the Works Progress Administration, and point to Great Britain in confirmation of their judgment.

Training for the unemployed is given in vocational education centres in Great Britain, and in 1937 the government recognized supplementary training and recreation projects, which had been carried on in over a thousand communities under voluntary auspices, by passing the 'Physical Training and Recreation Act', which absorbs them into a new governmental unit with a budget of £2 millions. Nothing of the sort exists in the United States except the Civilian Conservation Corps Administration, which in September had nearly 200,000 boys in its camps. In both Canada and the United States, sporadic efforts at training, vocational placement, and recreation are undertaken under both public and private auspices, but the Dominion of Canada in 1937 made $1 million available to the provinces on a matching basis for a youth-training plan.

Direct relief to the unemployed has everywhere been separated from general relief, except in the United States, where after 1935 the Federal government turned back this responsibility to the States. In England, on April 1, relief of the able-bodied unemployed was assumed by the new Unemployment Assistance Authority of central government, while general relief continued to be administered, as it had been for over three centuries in all English-speaking countries, by local units of government. In Canada no change has taken place in the plan of Dominion subsidies to provincial governments for relief of the unemployed to be used either for work relief or direct assistance. In the United States the withdrawal of the Federal government has in most States resulted in consigning the unemployed to the care of local governments, most of which cannot or will not assume the responsibility, and consequently in many areas a family containing an able-bodied worker cannot get relief. A bureau of governmental research in one mid-west city, after an independent investigation of a sample of the able-bodied unemployed from whom relief had been withdrawn, reported that the majority of these men were 'entirely without means, and few of them can expect to find employment in the labour market'. A few States have assumed financial responsibility in whole or in part for the care of this group of dependents.

A significant development in the United States, though one long in effect in other countries, is what has come to be called 'categorical relief'; that is, assistance provided by law for certain defined groups, such as the aged, the blind, dependent children, etc. The Federal Social Security Act, effective in 1936, makes provision for Federal aid to States and territorial divisions whose plans for such assistance have been approved by the Social Security Board, although it avoids the field of general public assistance. Up to Oct. 1937, 50 of the 51 jurisdictions had qualified for at least one of these provisions (Virginia alone having been accepted for none). Care of persons in these categories had been assumed by a number of States, although for the most part ineffectively for at least two decades, so the theory was not new, but the scale of application has been greatly broadened through Federal participation. During September nearly 1,250,000 persons were receiving assistance under these provisions to the amount of nearly $34 millions.

England cares for these groups through contributory social insurance, except that direct pensions are given on evidence of need in the case of aged persons who were too old at the inception of the plan to build up their own reserve or who were excluded from its benefits. Canada provides a non-contributory old-age pension on evidence of need, and some of its provinces have established permissive non-contributory aid to dependent children in their own homes.

Before the end of 1937, 30 of the 51 jurisdictions in the United States had set up new or reorganized their existing departments of public welfare to meet the requirements of the Social Security Act that the State either itself administer the programme or assume supervision of local administration. A trend is developing towards centralization of both administrative and supervisory responsibility in State departments of public welfare, which will probably result in greater efficiency and humanity in local care of the dependents.

During the past several years, private resources for relief have gradually decreased, either through lack of contributions or because of adoption by voluntary agencies of the principle that relief-giving is primarily a function of government. It has become generally recognized that the need for relief in the years since 1929 is far too great for private benevolence to meet. Private agencies have therefore been turning their attention to other fields of activity, such as child and family welfare, mental and social hygiene, recreation and vocational guidance. This gradual trend is true in all three countries under consideration. However, in the United States, contributions to the community chests reporting to their national association increased 6 per cent. in 1937 over the previous year, or to a total of over $83 millions. (*See* also NATIONAL INSURANCE; PUBLIC ASSISTANCE; SOCIAL SECURITY; SOCIAL SERVICES.)

RELIGION. We may perhaps define religion as a conviction of the real existence of an unseen spiritual world, of which it is our privilege to be citizens, and which makes many demands upon us in the sphere of conduct. The religious man holds that the realm of values is as real as the realm of facts. He usually believes that the ultimate values are a revelation of the mind of a personal God, who is worshipped as the creator and sustainer of the universe.

It is often said that this instinct or conviction, which has been of immense importance through the whole of human history, is gradually losing its power over belief and conduct. In support of this, observers point to the decline in attendance at public worship, to the impotence of the churches to influence politics, to the agnostic tone of popular literature, and to the active anti-religious propaganda of revolutionary governments. Persecution of a violent type, involving thousands of what in other ages would have been called martyrdoms, rages in Russia, Spain, Mexico, and in a much milder form even in Germany.

Since this ' anti-God ' agitation is just now prominent in the mind of the public, a few words on the subject may be appropriate. The conditions are not the same in the various parts of the world where it is active.

In Russia the Byzantine form of Caesaro-papism had made the Church the subordinate ally of the monarchy. The majority of the parish priests were almost as ignorant and superstitious as their flocks. But there was and is a great deal of genuine mystical piety in the Russian people, and there is not much evidence of popular hatred of Christianity. The wish to destroy religion came from the doctrinaire Communists. Not only is the ' dialectical materialism ' of Marx incompatible with any form of religion, but no Christian could accept the exclusively economic interpretation of history, or share the fury which drives men to destroy every vestige of the old social order. The revolt was not directed against the abuses of the Orthodox Church. 'The less corrupt a religion is', said Lenin, 'the more necessary it is to destroy it'.

Impartial observers do not think that this persecution will last much longer. Doctrinaire Communism has had its day, and the Soviet government is approaching the Fascist type. The natural policy of such a government is to make some sort of concordat with the Church, as in Italy, gaining the support of the Church in return for some measure of protection. Those who are making a revolution may hate religion; those who have made one are not likely to attack an institution which usually supports law and order. Nearly all the peasants have kept their icons, and it would be a great mistake to suppose that the Russian Church has been crushed beyond hope of recovery. Among the refugees there are theologians of world-wide repute, like Berdyaeff.

In Spain the conditions are too chaotic for any confident prophecy. The atrocities against the Church have been terrible, but they are probably the work of turbulent gangs rather than of the republican government. Hatred of the Church is intense among the workers in the towns and in the mines; but the Basques are practising Catholics, fighting, it appears, mainly for home rule. Many Spaniards are anti-clerical without being anti-Christian. They allege that while the Church was wealthy and powerful it kept a stranglehold on education, and obstructed many necessary reforms.

Mexico is a semi-barbarous country, in which the large majority of the population are pure Indians or half-breeds. The peons were badly treated, and the Church of their conquerors did little to help them. The present revolution is mainly an Indian revolt, and there have even been suggestions of a reversion to paganism, which will not be permanent. The future in Mexico is very obscure.

In Germany there is no wish to abolish the Deity, but to deify the State, a form of worship quite inconsistent with Christianity. The present situation is the result of what in modern jargon is called a resentment complex, exacerbated by fear of Bolshevism. But the worship of the God-State, which is no new thing in Germany, has taken firm root, and there is probably no task so pressing on all men of good will as to combat a doctrine which can have no other outcome than to plunge Europe into co-operative suicide.

In France the conservatives tend to rally round the Church, which is too weak to excite much hatred even among the radicals. In all Roman Catholic countries a man is generally either a practising Catholic or a freethinker, but there is more independent religion in France than in Spain or Italy.

Among non-Christian nations, the Turks have submitted to the disestablishment of their faith with surprising docility. In India the remarkable toughness of a religion based on caste is proof against all disintegrating tendencies. In China and Japan the official religions are said to be losing their hold, but authentic information is scanty.

In countries like Great Britain, where there has been no revolution, the first question that arises is whether the neglect of public worship is a grave symptom of decay or not. The chief reason for it is that the spread of education and the easy access to cheap books and broadcast performances have made the laity independent of the ministrations of the clergy to an entirely new degree. Parts of the liturgy—where one is used—are thought to be antiquated by the majority who do not attend church, but they still satisfy the minority who do, so that reform is difficult. The same problem prevents a revision of the formularies of belief, which in their present forms no longer satisfy educated people. Liberal Protestantism has been partially undermined by a more drastic criticism of the sources; the newer modernism is more willing to accept the necessity of a mythical element in Christianity.

It has been said that the majority of English people believe in Christ but not in God. A kindly, good-natured humanitarianism, which gladly accepts the moral teaching of the gospels, but without any well-defined standard of values, is the lay religion of English people. An age of great material abundance and widely diffused comfort is likely to be one of tepid interest in the things that are not seen. The future, so far as the present writer can guess, is not likely to see a decline in the religion of Christ, but institutional Christianity may have to pass into new forms.

It is sometimes thought that the religions of authority have a better chance of survival than what Sabatier calls the religion of the Spirit. This is too large a question to discuss here. At present the most noticeable fact is, not the thin trickle of conversions to the Church of Rome, but the surprising popularity of freak religions and revivals, most of which have their origin in the United States. The younger generation, impatient with all that their elders have taught them, seem sometimes eager to found a new religion of their own. (W. R. I.)

REPUBLICAN PARTY, THE. Decisively defeated in the national elections of Nov. 1936, the Republican Party of the U.S.A. entered 1937 with its representation in Congress reduced to 16 senators and 89 members of the House. Only seven States had Republican governors, and in State and local governments, the roster of Republicans holding elective office was comparatively small. The Republican task in 1937 was one of organization, rehabilitation, and the canvassing of methods by which the party, despite its meagre representation in Congress, could function as an effective opposition. Mr. John Hamilton was retained as chairman of the party.

Among proposals advanced by Republicans in Congress during the year were those for an extension and strengthening of the present Social Security Act. Recommendations made by Republicans led to the establishment of a new advisory committee by the Social Security Board. The Republicans stressed the need for an improvement in the administration of Federal relief. Republican congressmen adopted a motion, embodied in a subsequent resolution, in favour of returning the actual administration of relief and work relief to the States, with the Federal government paying 75 per cent. and the States 25 per cent. of the total costs.

A Republican substitute was offered for the administration's wage and hour bill, aimed to eliminate the proposed five-man labour standards board, and to establish more simple standards of fixing minimum wages and maximum hours. Republicans in Congress also sought to give the Wagner Labour Relations Act a better balance by placing greater responsibilities on labour unions. When it became evident that the pending constitutional amendment to abolish child labour would fail of ratification in 1937, a Republican proposal was advanced for a new child labour amendment, avoiding the major objections registered against the old amendment. This received the unanimous support of the senate judiciary committee. Republicans in Congress favoured the repeal or modification of the surplus profits tax, urged the elimination of unnecessary government spending, and criticized some features of the administration's plan for governmental reorganization, particularly the proposal to bring the semi-independent commissions under executive control, and the proposal to abolish the office of comptroller-general with its independent audit of executive spending. They opposed unitedly the president's proposal for enlarging the membership of the Supreme Court. On several issues, the Republicans co-operated closely with Conservative Democrats.

A proposal of ex-President Hoover to hold a mid-term Republican convention in 1938 caused much discussion. Meeting in Chicago in November, the Republican National Committee, sidetracking the proposal for a mid-term convention, authorized its executive committee to name a committee on programme, which should report back later its recommendations to the full National Committee. In December, the executive committee met in St. Louis, and set up such a committee with a membership of several hundred men and women. Dr. Glenn Frank, former president of the University of Wisconsin, was named chairman.

In the election of Bruce Barton, in the 17th New York district in November, the Republicans gained a House seat. In other special congressional elections, two more New York districts remained Republican, with a substantial increased percentage of the total vote. The Republicans also increased their strength in the New York State Assembly, and won control of the New Jersey State legislature. Republican mayors were re-elected in Cleveland, Akron, and Canton, Ohio.

On Sept. 18, Senator Arthur Vandenberg of Michigan urged a coalition of all parties to fight the 'Roosevelt-Farley-La Follette' party. During the latter part of the year, ex-President Hoover made several important speeches. On Dec. 10, in Washington, at the Gridiron dinner, ex-Governor Alfred M. Landon issued a statement definitely removing himself as a possible Republican candidate in 1940. (*See* also Elections: *United States.*)

RESINS, SYNTHETIC: *see* Plastics Industry.

RESTAURANTS: *see* Hotels, Restaurants, and Inns.

RETAIL SALES. Retail sales of food in Great Britain continued to expand during 1937, when the Bank of England index number of food sales (1933 = 100) reached a figure of 131, as compared with 120 in 1936 and 111 in 1935. But to an increasing extent this expansion was being accounted for by rising food prices; so that the increase in volume was narrowing, as is shown by the following table, in which comparison is made with the ministry of labour cost of living index (food only):

(Food)	Money sales Per cent.	Retail prices Per cent.
1936 . .	+ 9	+ 4
1937 . .	+ 9	+ 7

In the case of other merchandise, the expansion of retail sales continued to be somewhat smaller than for foodstuffs, the corresponding index number being 119 for 1937, 113 for 1936, and 108 for 1935. A distinction must here be drawn between sales of clothing and of household equipment (furnishings, hardware, etc.). During the period of economic recovery, from 1932 to 1936, sales of household goods expanded appreciably faster than clothing, retail prices in each case being fairly stationary. In 1937, however, this position was reversed, and the increase in clothing sales began to outstrip that of household equipment. At the same time, retail prices of non-food articles began to rise appreciably for the first time since 1930; and this rise affected household goods considerably more than clothing. In the following table, comparisons are made between 1937 increases in money sales and retail prices, the latter being approximate estimates only:

(1937)	Money sales Per cent.	Retail prices Per cent.
Clothing:		
Women's wear. .	+ 6·1	+ 2·8
Men's & boys' wear	+ 5·9	+ 3·2
Boots & shoes . .	+ 8·4	+ 5·9
Dress piece goods .	+ 1·8	+ 2·7
House equipment:		
Furnishings . .	+ 3·1	+ 10·0
Hardware . . .	+ 1·6	+ 8·6
Piece-goods . .	+ 2·8	+ 12·2

Thus the volume of clothing sales continued to expand, whereas sales of household goods declined appreciably in volume.

In the autumn of 1937, a recession developed in the sections of retail trade catering for consumers with higher incomes, but not correspondingly among those supplying work-class consumers; as a consequence, retail sales in Central and West End London (relatively high-class) rose during 1937 by only 2 per cent., as compared with over 7 per cent. for Great Britain as a whole. The cause of this recession is thought to be closely linked to the contemporaneous decline in Stock Exchange values. (D. Ba.)

United States.—The sales for all types of American retail stores in 1937 are estimated by the United States department of commerce, to have been $40,388 millions, an increase of approximately 6·5 per cent. over the total retail sales for the year 1936. The largest sales increases in dollar volume were shown by the three major mail-order companies, which had an average gain of about 15 per cent. for 1937, and this gain was equalled also by the shoe chains. Four of the leading grocery chains showed an increase of 9 per cent. for 1937, the drug chains being next with an average of 7·5 per cent. The variety chains had an average gain of 4·7 per cent. Although the gains of the variety chains seem small when expressed in terms of per cent., their sales declined from 1929 to 1933 only 25 per cent., as compared with a general retail decline for the same period of 49 per cent. in dollar volume. Consumers' co-operative stores showed a gain of 20 per cent. in 1937 over 1936, although their total sales in dollar volume probably did not exceed $500 millions, or about 1·25 per cent. of the total 1937 volume of $40,388 millions. The department, dry goods, and general merchandise stores showed a gain of 6 per cent. in sales in 1937 over 1936. Since a little better quality of merchandise was sold in 1937 than in 1936, it is probable that the total number of transactions, represented by unit sales to the consuming public, was little, if any, more in 1937 than it was in the previous year.

The outstanding problem which confronted retailers in 1937 was the employee-relations question. Trade unions made important gains in the retail field, and through collective bargaining obtained substantial wage increases or shortened hours for various groups of retail employees. Department store and speciality store managements granted substantial increases to their employees in other localities where they were not approached by the unions.

At the beginning of 1937, retail sales plans were predicated upon obtaining an increase of at least 10 per cent., which most of the better-managed stores realized during the first half of the year. During the following six months, however, sales increases became progressively less. As a consequence, the average gain in sales of 6 per cent. in 1937 over 1936 has been insufficient to absorb the increase in pay-rolls and in additional taxes; therefore department store and speciality store profits for the year 1937 will be less than those shown for the year 1936. Department store operating expenses, moreover, increased in 1937, approximating to 35 per cent. of retail sales, or an increase of about 10 per cent. of the 1936 expense rate. It is estimated that the net profits on total sales of department and speciality stores for the year 1937 will not exceed (if they reach) 3·5 per cent., whereas in 1936 their average net profit on sales was 4·9 per cent., based on the figures released by the National Retail Dry Goods Association. The decline in the sales volume during the last half of 1937 is attributed to the fact that commodity prices rose too quickly in the early months, and when the business recession began in the summer, consumers curtailed their buying power, leaving many retail stores with relatively high inventories. In turn, retailers were forced to make price cuts in order to liquidate their inventories during the second half of the year, and the resultant increase in mark-downs during the latter period will also have its influence in reducing retailers' profits for the year 1937.

The application of legal price maintenance operated to some extent to increase prices of nationally advertised commodities, notably in cosmetics, drugs, and books. Price-maintained arrangements were made possible by passage of the Tydings-Miller Act, making it legal for manufacturers to establish the retail price of their products in the 42 States where fair-trade laws were already in effect.

RÉUNION, an island *c.* 420m. east of Madagascar, is a French colony. Area 970sq.m.; population 209,000. The capital is St. Denis. Réunion exported, in 1937, 70,000 tons of sugar to the value of over frs.90 million, and over 34,000 hectolitres of rum. Total exports, Jan. to Oct. 1, 1937, were valued at frs.116 million. A health resort has been opened at Cilaos (3,250ft.). A branch of the Algiers–Congo–Madagascar air line is to serve the island.

RHEUMATISM AND RHEUMATOID ARTHRITIS. The researches of recent years into the cause of these diseases indicate that, while each is the product of a group of aetiological factors, certain of these factors are common to both. The causes may be divided into two groups, broadly described as the seed and the soil.

As a result of the work of many investigators during the past decade particularly, the streptococcus is generally accepted as the seed factor in both diseases. At first the streptococcus *viridans* was regarded as the cause of arthritis, since it was found occasionally in the blood and tissues, it gave definite reactions when used as a vaccine, and in some instances caused arthritis when inoculated into susceptible animals. The haemolytic and non-haemolytic strains, however, produced similar effects, although less often met with in the septic foci present in patients suffering from the disease. The frequency with which the *viridans* type was found to be present in the body in cases which showed no sign of arthritis indicated that it could not be regarded as the specific and only cause. Further research appears to indicate that the haemolytic group more often furnishes the infecting organism, and many regard the *viridans* type as a saprophyte found as often in health as in disease.

The joint lesions which have occasionally been induced in animals by the injection of strains isolated from cases of rheumatism are believed by many pathologists to be septic and not rheumatic in nature.

The problem has been rendered more complex by the researches of Zinsser, which showed that the passage of certain strains of streptococci from one form to another may occur, and more recently Hadjopoulos and Burbank have claimed to demonstrate a wider range of mutation in tissue cultures, though this has yet to be confirmed.

Attention has recently been concentrated upon immunological reactions, which tend further to incriminate the haemolytic streptococcus. Dawson and Boots found that *antistreptolysins* are present in rheumatic fever in significantly high titre, but that *agglutinins* are not present in significant amount, while in rheumatoid arthritis the reverse is the case. Todd, Goldie, Griffiths, and others have demonstrated that *antihaemolysins* are present in arthritis, though in less amount than in rheumatic fever. *Agglutinins* for haemolytic streptococci have been found in 90 per cent. of cases of rheumatoid arthritis, but it has been argued that this may be natural and not acquired. The frequency of their occurrence and the height of the titre support the view that the haemolytic streptococcus is a factor in the disease, though *agglutinins* are also found in a small percentage of controls.

The view is gaining support that, as a result of absorption of toxins from septic foci in the system over long periods, the tissues become 'sensitized', and some believe that certain toxins have a special affinity for the joints and connective tissues. This leads sooner or later to a breakdown of resistance which may be accelerated by intercurrent disease, psychical factors, or other cause, and an inflammatory reaction occurs in the sensitized tissues to the nucleoproteins of bacterial disintegration and an attack of 'rheumatism' is the result. There is evidence that the substance which provokes such a reaction may be common to many strains or types and not specific. This so-called allergic theory is not universally accepted, and is the subject of further research.

The possibility of a virus infection in rheumatic disease has also been put forward and is being investigated with some suggestive results, especially by Schlesinger, Eagles, and others, but is as yet unproven.

The theory that the tubercle bacillus in an attenuated form is occasionally responsible for arthritis of the rheumatoid type has been put forward in France, but has not been generally accepted elsewhere. A tuberculous focus might perhaps act as a sensitizing agent preparing the way for other infections.

Treatment.—The most notable advance in treatment has been in the use of gold salts in rheumatoid arthritis, largely owing to the work of J. Forestier. In France, Germany, and Great Britain, the method has been widely used and excellent results claimed. There is not the same favourable opinion in the United States, and as one American writer expressed it, 'America is off the gold standard'. It is impossible to ignore the great number of well-substantiated cases in which remarkably good results have been obtained, and the general view is that gold is the most potent and promising remedy that has yet been tried. It is, however, by no means free from risk, and experience in its use is desirable if the possible dangers are to be avoided or controlled. The dosage needs strict supervision, and increase must be cautious. Certain individuals are susceptible to the smallest amounts, and unfavourable reactions may appear to the first dose, however small. The beneficial effect is sometimes not perceived until a second course has been given, but this must not follow too closely on the first, an interval of three to six months being allowed to elapse. A total of one gramme is the usual limit for a course, and the first dose should not exceed 0·01 gramme. As many as four or five courses may be required.

In the United States, vaccine therapy seems to be the treatment of choice, and it is also used extensively in England. This method is also not free from risk, and demands close observation of the effect of every dose if ill effects are to be avoided. Formerly, much larger doses were used than is now the practice, with the idea of trying to raise the immunity, but experience has shown that desensitization is the object to be aimed at, and the dose should be just below that which evokes any sign of reaction. Gradual decrease rather than increase often gives the best results. Where there is an obvious focus of infection, an autogenous vaccine may be tried, but in view of the lack of definite proof of the infecting organism, it is generally better to use a stock vaccine prepared from a number of strains derived from cases of rheumatic disease, and to begin with a dose not exceeding 100,000.

The progress of the patient under either treatment may be gauged by the rate of sedimentation of the red-blood cells. This test has been extensively studied and its value is proved; it probably depends upon variations in the relative proportions of the blood proteins.

The value of rest in the treatment of the more acute forms of arthritis is being recognized more widely, and the régime adopted in the management of early tuberculosis appears to be well suited to acute or subacute arthritis. In the less severe cases, rest for the affected joints is secured by the use of splinting, generally with plaster of Paris.

The use of artificially induced fever in rheumatic diseases has been extensively tried out, especially in America. It has given remarkable results in arthritis due to gonorrhoeal infection; Hench reports that of 182 cases treated by this method, 70 per cent. became symptom free, 15 per cent. markedly improved, 10 per cent. moderately improved, and 5 per cent. experienced no benefit. In rheumatoid arthritis the results have been disappointing. The treatment is difficult to apply, and requires a hospital with a specially trained staff. Good results are claimed for it in the treatment of chorea. It is not free from risk, and a few fatal cases have been recorded.

Physical methods of treatment are being used more widely and not confined to the spas. Clinics for such treatment are being established in most large towns, but for arthritis of any severity in-patient rather than out-patient methods are desirable.

The international League against Rheumatism has now active branches in almost every civilized country. In Great Britain the Empire Rheumatism Council is the result, and is doing much to promote research into the aetiology and treatment of this important group of diseases, a direction in which workers in the United States have already achieved a great deal. Full references and accounts of all the important work in both countries as well as on the continent of Europe will be found in the 'Reports on Chronic Rheumatic Diseases', published annually by the British Committee, to which a full account of American work is contributed by Dr. Hench, of the Mayo Clinic. (C. W. B.)

RHODE ISLAND: *see* UNITED STATES OF AMERICA.

RHODESIA, NORTHERN. A British Protectorate lying between lat. 8° 15′ and 18° 5′ S. and long. 22° and 33° 35′ E., the Zambesi forming the southern boundary. Governor (from 1938), John Alexander Maybin. Area, 288,400sq.m.; pop. (1931), 1,386,081, of whom 13,849 were Europeans. Capital, Lusaka (transferred from Livingstone in 1935); Ndola is the centre of the 'Copper Belt'. A Native Authority Ordinance, extending the principles of 'Indirect Rule', was issued in 1936.

1937 was a year of marked economic recovery. In May a Commission was appointed by the British government to inquire into the financial position of the territory. It was announced that a portion of the budget surplus would be devoted to the construction and maintenance of a road from Lusaka to the Otto Beit bridge now being built over the Zambesi at Chirundu, which when opened will bring the capitals of the two Rhodesias within a day's journey of each other by car. The development of the new capital, Lusaka, made considerable progress, and its importance as an airport is steadily increasing. In Nov. it was announced that the petrol and entertainment duties were to be abolished, and a boarding school established at Lusaka.

Trade and Communications.—Copper is the largest export, its value in 1936 being £4,994,716. Cobalt, vanadium, and gold were also exported. There was a drop in imports owing to cessation of imports of machinery and materials for developing mines. Total imports (1936), £2,291,953; exports, £6,045,137. The railway from Southern Rhodesia to the Belgian Congo passes through the centre of Northern Rhodesia, and branch lines serve the Roan Antelope, Nkana, and Mufilira copper mines.

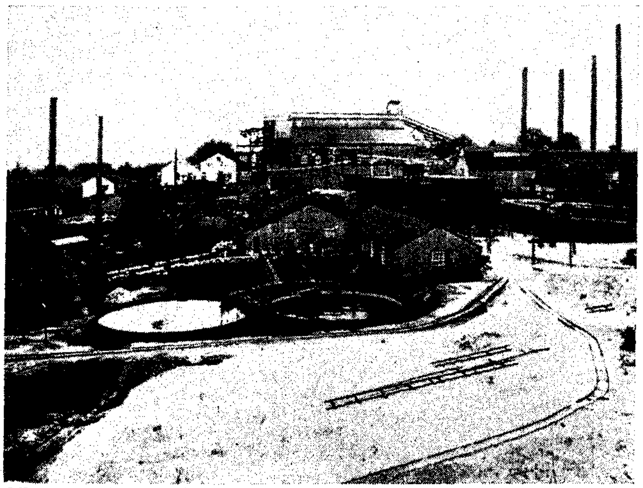
There are three main roads. Roads are generally passable during nine months, but December to April loads are restricted to 7,000lb. There are six government telephone exchanges, and private exchanges at three of the mines. Imperial Airways service operates, and also the French Air Service between Madagascar, Broken Hill, and Elizabethville.

Banking and Finance.—Southern Rhodesian notes and coinage are legal tender. Revenue (1936), £863,255; expenditure, £887,417. There is a native poll-tax, and an income-tax (value in 1936, £211,721). Mineral rights belong to the British South Africa Company, which still draws mining royalties. (W. M. Ma.)

RHODESIA, SOUTHERN, a self-governing British colony, extending from the Zambesi in lat. 15° 6′ S. to the Limpopo in lat. 22° 14′ S., and from the Bechuanaland protectorate in long. 25° 14′ E. to Mozambique in long. 33° 4′ E. Area, *c.* 150,344sq.m. Pop. (1931), 1,109,012, of whom 49,910 were Europeans. Governor, Sir Herbert Stanley, G.C.M.G.; prime minister, Dr. G. M. Huggins. Great Britain retains certain powers over native legislation. The chief towns are Bulawayo (11,879), the capital Salisbury (9,619), Umtali (2,090), and Gwelo (1,266). State education is provided for Europeans; boarding schools play a large part. Matriculation for the University of South Africa is taken. Native education is provided by missions. The Jeanes School for native teachers is at Dombashawa.

History.—In Oct. 1937 the functions of the high commissioner were transferred to the secretary of State, and a board of trustees appointed to govern the native reserves. A new Income Tax Act provides for the taxation of incomes derived from outside the colony. In July a new ‘ Union Party ’ was formed to work for the country's amalgamation with the Union of S. Africa. Work on the Umgusa dam, near Bulawayo, was almost completed during the year; and the expenditure of £500,000 to construct a further 1,000m. of strip roads was approved. The relations between the two Rhodesias and Nyasaland continued throughout the year to be keenly discussed, and on Nov. 23 it was announced in the British Parliament that a royal commission was to be appointed to visit the three countries, and report on the desirability of closer co-operation or association between them.

Trade, Communications, Finance, etc.—In 1936 there were 36,099 miles of telegraph and telephone. Railways representing five companies combined in organization as Bulawayo-Rhodesian Railways Ltd., over 2,638m. of track.



Office of the High Commissioner]

GLOBE AND PHOENIX GOLD MINE, SOUTHERN RHODESIA

Agricultural products are tobacco, maize, and citrus. There is great variety of minerals. Chrome production is increasingly important. Exports (1936, excluding est. value of gold premium, £2,236,000), £7,917,171; imports, £7,026,688.

British and South African silver coins are in circulation. Notes are issued by the two banks, the Standard Bank of South Africa and Barclay's. Revenue receipts for 1936–37 were £3,044,000, including customs £810,000, income-tax £623,000, native tax £393,000, mining revenue £395,000; est. revenue for 1937–38, £3,103,500; est. expenditure, £3,149,587.

Defence.—All citizens are liable for a period of military training. The British South African Police are the only permanent force, but there is provision for formation of a police reserve. The Territorial active force forms 2 battalions of the Rhodesia regiment. There is a subsidy for training a reserve of air pilots.

See Falker Windram, *Night over Africa,* 1937.

(W. M. Ma.)

RICE: *see* Grain Crops.

RIO DE JANEIRO, capital and largest city of Brazil, on the bay of Rio de Janeiro, or Guanabara. The area is 451sq.m., co-terminous with the Federal district. Population (official est. Dec. 31, 1936), 1,756,080. It is the fifth largest city in America. Municipal organization is controlled by the national government, through an appointed prefect, or mayor. Little of note peculiar to the city itself occurred during 1937, but the strong centralizing trend of the national government is expected to bring about a considerable increase of population. The wide avenues and tropical flora, the botanical gardens, and the imposing buildings, against the setting of the beautiful harbour, make the city one of the world's most impressive capitals. It has external communication by steamship and air transport service, and internal by air, railway, sea, and highway. It is the seat of the National University of Brazil, created in June 1937 as the successor to the University of Rio de Janeiro. *See* Brazil.

RIO DE ORO AND ARAR: *see* Spanish West Africa.

RIO MUNI: *see* Spanish West Africa.

ROADS AND HIGHWAYS. During the past 20 years, science has given us roads that are durable, weatherproof, dustless, and capable of carrying modern vehicles at speeds up to 100 miles per hour. Unfortunately, this achievement has been attended by a rising casualty list which shocks public opinion, and constitutes the main preoccupation of road experts. Public safety now dominates every other problem of the road. In Great Britain, road accidents occur at a rate exceeding 200,000 per annum; fatal accidents on British roads numbered 19 a day in the years 1930 and 1934, since when, fortunately, the figures have shown a slight downward tendency. It is stated that, in Germany, 8,381 persons were killed in road accidents during 1936, while the corresponding figure for France was 4,415. The toll of the road is rising in the United States of America, where it is predicted that road deaths may reach a total of 40,000 in 1938, as compared with 37,000 in 1935 and 38,500 in 1936. Some slight consolation may be found in the fact that, generally speaking, the curve of road accidents rises less steeply than that of motor-car sales.

In Great Britain, the most numerous victims are pedestrians and cyclists, who collectively account for about seven-tenths of the casualty list. A wide variety of expedi-

H.M. Office of Works]

GREAT BRITAIN. THE GREAT WEST ROAD, LOOKING OUT OF LONDON

ents has been introduced, in the hope of stemming the tide of accidents, *e.g.* speed limits of 30 miles per hour on roads in built-up areas, refuges, crossings, subways or bridges for pedestrians, guard rails, white lines and cycle tracks, not to mention a multiplicity of warning signs, traffic lights, etc. A recent innovation in Great Britain was the appointment, by the minister of transport in 1937, of accident officers to examine 'black spots', and stimulate local interest in safety problems.

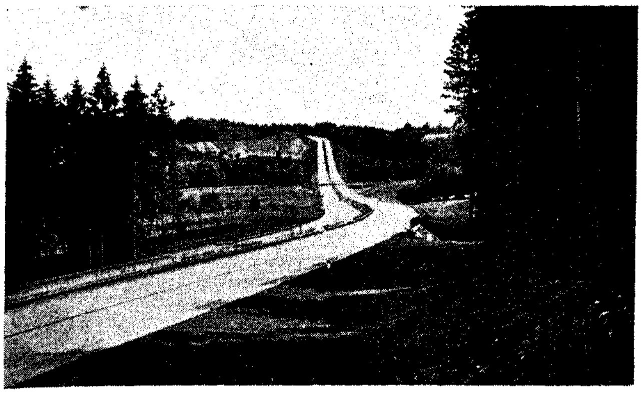
Recent British Legislation.—The use of road frontages for purposes incompatible with the safety and convenience of traffic will, in future, be checked under the provisions of the Restriction of Ribbon Development Act, 1935. Section 2 confers upon highway authorities the control of estate development and new buildings within 220ft. from the middle of the road. The provision of service roads can be secured, and extended powers are given for the creation of parking places, above and below ground.

The passing of the Trunk Roads Act, 1936, testifies to the growing recognition of the national importance of the British road system which hitherto has been maintained entirely by local highway authorities. Under the new Act, the minister of transport became, in 1937, the highway authority for 4,500 miles of trunk roads in the United Kingdom, leaving about 174,000 miles under local control, as in the past.

The following recommendations are extracted from the memorandum on *The Lay-out and Construction of Roads*, issued by the ministry of transport in 1937:

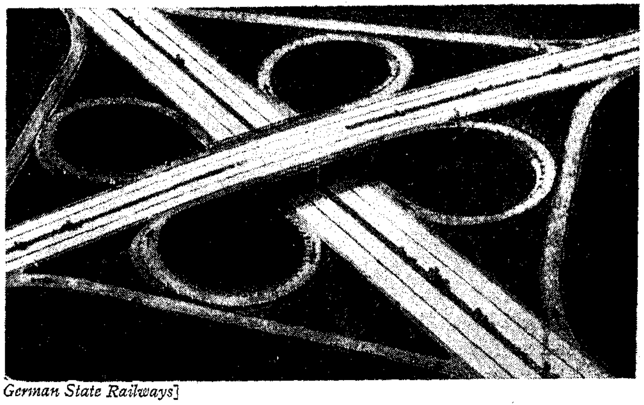
'The unit width for each lane of vehicular traffic should normally be 10ft., and the width of the carriageway should not be less than 20ft. Where the traffic volume demands four lanes, the carriageway should be divided by central islands, or by a continuous central reserve, so as to segregate up and down traffic. Dual carriageways are justified on roads carrying 400 vehicles and upwards per hour. Shrubs planted on the central reserve will mitigate glare. Cycle tracks (6ft. wide), as well as footways, will be necessary along many busy highways. One thousand feet should normally be regarded as the minimum radius of curves, and the width of the carriageway should be increased where curves occur. Superelevation or banking should be applied, varying from 1 in 16 for curves of 500ft. radius to 1 in 40 for curves of 5,000ft. radius. A gradient of 1 in 30 is usually regarded as the maximum. In setting out vertical curves, the aim should be to enable drivers approaching a summit from opposite directions to see each other at a distance of at least 500ft.'

Traffic and Road Works.—In spite of the dangers of the highway, there are no signs of any flagging in the popularity of motor transport. In Great Britain, every day sees 400 or 500 new automobiles come on to the road. The number of licences current in Feb. 1932 was 1,691,565, as compared with 2,378,717 in 1937—an increase of nearly 41 per cent. in five years. The traffic census taken on the 27,000 miles of Class I roads in Aug. 1935 recorded an increase of 34·47 per cent. in vehicles, in comparison with the year 1931. In Great Britain, the number of vehicles per mile of road is about 12 (omitting motor-cycles), in France about half that, and in the U.S.A. approximately eight. In the light of such figures, it is not surprising that the capacity of highway systems originally intended for horse-drawn traffic should be severely overtaxed, and that accidents should be rife. In many of the older countries, the governments accordingly are faced with the alternatives of drastically improving the existing roads or creating a new system of motorways adapted for modern traffic. In Great Britain hitherto, the policy usually favoured has been to improve the old highways and form by-passes round towns and villages. Upwards of 300 by-passes have already been formed, but the results have not won universal approval, and objectors are apt to point to the bolder methods pursued in Germany and Italy, where main roads are a national, not a local, responsibility. The German government has embarked upon a programme for the building of nearly 4,500 miles of motor-roads (Autobahnen), of which 1,240 miles were open to traffic in Dec. 1937. They are designed with dual carriageways, and traverse the country with the uncompromising directness characteristic of railway engineering. There are bridges or subways at all cross-roads, so as to eliminate the risk and delay associated with old-fashioned road junctions. In Italy, too, the building of motorways (Autostrade) has been in progress for several years, and few roads are more familiar to tourists than the motorways radiating from Milan to the Italian lakes, from Rome to Ostia, and from Rome to Naples. The desire to



German State Railways]

GERMANY. THE STATE MOTOR ROAD BETWEEN MUNICH AND THE FRONTIER



German State Railways]

A CLOVER-LEAF JUNCTION ON ONE OF GERMANY'S NEW STATE MOTOR ROADS

attract foreign visitors has been largely instrumental in the building of mountain roads in France and Austria. During the summer of 1937, the Route des Alpes, passing over the Col de l'Iséran (9,000ft.), was opened for its entire length. At the same time the Austrian government completed the Grossglockner Hochalpen Road (summit level 8,200ft.)—the project including a tunnel more than 900ft. in length.

In the United States of America, the building of new roads proceeds at the average rate of about 20,000 miles a year. During the year 1937 no fewer than 1,149 level crossings were abolished. Good progress is being made with the inter-American highway, which will extend 3,250 miles from Nuevo Laredo, on the border between Texas and Mexico, to Panama City. The gaps in the route have now been reduced to about 560 miles in the aggregate.

Urban Congestion.—The ever-growing congestion in populous centres, and especially in the great capital cities, is taxing the ingenuity of road-engineers and town-planners. A recent investigation in London showed that the average pace attained by an automobile, in making a 12½-mile journey across the heart of the metropolis, was roughly 12½ miles per hour. Traversing the City from east to west, the average was only 5·85 miles per hour, while on the slowest journey recorded, the pace dropped to 3·6 miles per hour. These figures compare with an average speed of 23·6 miles per hour on the North Circular Road, which lies at a distance of seven miles from the centre. Site values are so high that street widenings in the heart of London may cost £2 millions or more a mile, while the value of the space occupied by a stationary motor-coach has been estimated at £40,000—an indication of the intense difficulty presented by the parking problem in such areas. The gravity of the situation is increased by the division of the responsibility for improvements among multitudinous authorities, and it was in the hope of securing a plan of comprehensive scope that the minister of transport, three years ago, ordered a Highway Development Survey of Greater London to be prepared by Sir Charles Bressey, in consultation with Sir Edwin Lutyens. The plans were ready at the end of 1937. Meanwhile, important works in progress include the construction of a Lower Thames Tunnel at Dartford, and the extension of the Cromwell Road to form a new western exit from London. Londoners have much to learn from what has been done in New York, *e.g.* the elevated highway running the whole length of the west side of Manhattan, from the Harlem River to the Varick Street entrance to the Holland Tunnel—a distance of 12 miles. At the Harlem River, a junction is made with the Henry Hudson Parkway which, in its turn, connects with the Hutchinson River Parkway of the Westchester System. Mention should also be made of the Long Island Parkway System, and of the Pulaski Skyway which, avoiding the local traffic system, connects the Jersey portal of the Holland Tunnel with Newark Airport. On Dec. 22, 1937, the south tube of the 'Lincoln' vehicular tunnel under the Hudson River was first opened to traffic.

Paris has devoted much attention to the building of vehicular subways, enabling traffic along the principal radial roads to pass under the ring road known as the Boulevard Militaire which follows the course of the dismantled fortifications. In Berlin, a scheme is under way for the extension of the well-known Unter den Linden, where, incidentally, the old lime trees have recently been replaced by new. This extension will involve the drastic widening of the Charlottenburger Chaussee through the Tiergarten. As part of the re-shaping of Rome, the new Via del' Impero claims attention by its imposing width, and the manner in which it brings to view some of the principal features of the ancient capital of the world. Stockholm displays an extremely ingenious application of the clover-leaf device as a means of solving traffic difficulties at Slussen—the most congested intersection in the City. The progress of road engineering will be reviewed at the International Roads Congress to be held at The Hague in June 1938. (*See* also TOWN AND COUNTRY PLANNING.)

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ROBINSON, JOSEPH TAYLOR, American senator; born at Lonoke, Ark., Aug. 26, 1872; died at Washington, D.C., July 14, 1937. A Democrat since his entrance into politics at the age of 20, he was a member of the House of Representatives, 1902–13; governor of Arkansas, 1913; and U.S. senator, 1913–37.

ROCKEFELLER, JOHN DAVISON, American capitalist; born at Richford, N.Y., July 8, 1839; died at Ormond Beach, Fla., May 23, 1937. A biography is to be found in the *Ency. Brit.*, vol. 19, pp. 364–65. The unpopularity of his business methods was, in view of the size and usefulness of his benefactions, gradually diminished, and at the time of his death he was remembered more for his philanthropies than for his business tactics.

ROCKEFELLER FOUNDATION, THE, was chartered in 1913 for the permanent purpose of 'promoting the well-being of mankind throughout the world'. Its present programme is concerned with certain definite problems in medical, natural, and social sciences, the humanities, and public health. In the field of medicine its interest is centred in nervous and mental diseases, and its contributions are chiefly for the furtherance of research and teaching in psychiatry and allied subjects. Its programme in the natural sciences is concerned with experimental biology. In the social sciences it has three spheres of special interest: international relations, social security, and public administration. The programme in the humanities centres on the techniques by which cultural levels of contemporary society are being influenced—such as museums, the radio, drama, and libraries—and the promotion of better international understanding through cultural interchanges. The programme in public health includes research on a number of selected diseases; demonstrations in the control of some of these diseases in their environments; co-operation with governments in services of central or local health departments; and the development of public health education. During 1937, the foundation appropriated approximately $9,850,000 for work in its various fields of interest.

The General Education Board was incorporated by an act of Congress in 1903, with the stated object of 'promoting education within the United States of America without distinction of race, sex, or creed'. Its present programme is restricted in the main to giving assistance to research and experimentation for the improvement of general education, with special reference to education, both white and negro, in the Southern States. During 1937, the board appropriated approximately $5 millions for purposes within its present programme and to bring to a close certain other undertakings under previous programmes.

The Spelman Fund of New York, during 1937, continued its programme directed at the improvement of the methods and techniques in the field of public administration. Support was extended to public and quasi-public agencies engaged in circulating information regarding advances in administrative practice, in developing new types of organization and operating methods, and in actually installing administrative improvements in governmental agencies.

ROMAN CATHOLIC CHURCH. There are at present more than 375 million Catholics in the world. These include members of the Latin, Greek, and other Oriental Rites in communion with, and under the jurisdiction of, the pope, or bishop of Rome. The number of Greek or Oriental Roman Catholics is approximately 7,758,300. The Catholic population on the European continent is estimated at 210 millions. That of England and Wales is about 2,400,000; of Scotland about 600,000; of all Ireland about 3 millions. In the two Americas, the Catholic Church includes a membership of 136 millions. Of these, there are in the United States, including Alaska and Hawaii, 20,959,134; in the Dominion of Canada, 4,415,000.

New Cardinals.—This vast body of the faithful is united under the spiritual headship of the Roman pontiff (*see* PIUS XI), who exercises temporal sovereignty over the Vatican City State. The College of Cardinals, titular pastors of churches in Rome, was brought up to one less than the traditional and canonical number of 70, when, on Dec. 13, at the Secret Consistory, Pope Pius created five cardinals: Arthur Hinsley, archbishop of Westminster, England; Pierre Gerlier, archbishop of Lyons, France; Giuseppe Pizzardo, secretary for Extraordinary Ecclesiastical Affairs; Ermenegilde Pellegrinetti, apostolic nuncio to Yugoslavia; and Adeodato Giovanni Piazza, patriarch of Venice, Italy. The composition of the Sacred College is (Jan. 1, 1938) 39 Italian and 30 non-Italian members. Two members died during 1937: Cardinal Ilundain y Esteban, archbishop of Seville, Spain, and Cardinal Bisleti, prefect of the Sacred Congregation of Seminaries. An exceptionally large number of consecrations of new bishops and of translations to different sees was made in 1937. In the United States, three dioceses were raised to archdioceses: Detroit, Mich.; Newark, N.J.; and Louisville, Ky.; and four new dioceses were erected: Lansing, Mich.; Camden and Paterson, N.J.; and Owensboro, Ky. For the first time in many years, every American see was filled.

In the work of the 11 congregations which carry on the executive functions at the Vatican, particular interest attaches to the function of the Holy Office which deals with matters of faith and morals. This Congregation listed six volumes on the index of forbidden books: *Études sur Descartes*, by L. Laberthonière; *Klosterleben*, by Burchand Assmus; *Die Natürliche-Geistlehere*, by Ernest Bergmann; and *Ragione et Fede, Gesu Cristo et Cristianesimo*, and *Il Vangelo con Introduzione*, by Pietro Martinetti. Peculiar curiosity attaches, also, to the decisions of the Sacred Rota, the second of the three tribunals, or judicial courts. Decisions were rendered on 78 marriage cases; decrees of nullity were awarded in 34; it is worthy of note that, in 21 of these annulments, the petitioners were so poor that they were unable to pay even the ordinary expenses of the judicial processes. There were no canonizations during the year. Pope Pius, during his pontificate of 15 years, has celebrated the extraordinary number of 24 canonizations and 39 beatifications.

In the diplomatic sphere, a *modus vivendi*, after a lapse in relations for 63 years, was signed by the Holy See and Ecuador on August 9, 1937. The *modus vivendi* with Czechoslovakia, executed in 1928, began to be put into effect. The Pope sent his special representative, Archbishop (now Cardinal) Pizzardo, to the coronation on May 12 of King George VI. Semi-official relations were entered into with the Insurgent government in Spain by the exchange of chargés d'affaires.

The concordat with Italy continued to be observed by both parties, and cordial relations existed. Acting as papal legate, Cardinal Dougherty, of Philadelphia, Pa., was formally received by the Chinese authorities and the Japanese emperor.

Japan and Spain.—The anxiety of the church was centred on the conflicting nations. A newspaper report internationally publicized, to the effect that the Vatican had issued instructions to the Chinese missionaries to aid Japan in the undeclared war in China, was emphatically denied. The structure of the church and the public practice of religion continued to be obstructed in Government Spain, and the number of priests, religious and lay Catholics alleged to have been executed in Government territory rose above 14,000. On July 1, the Spanish hierarchy sent a joint letter to the bishops of the world protesting against the Valencia government. While there was a relaxation of active persecution of the Catholic Church in Mexico, the anti-religious decrees were neither repealed nor amended. During the year, however, a very vigorous forward movement of pacific Catholic action through education was solidified. In Soviet

Russia the Catholic Church remained in a state of collapse under the continued assaults of the atheistic régime. On several occasions, Pope Pius declared that the great heresy of this age was that of the materialistic and atheistic ideology of Communism.

Germany.—In Nazi Germany, where Catholics constitute about 33 per cent. of the population, the conflict with the church was intensified. On Feb. 14, Cardinal Faulhaber, of Munich, accused the Nazis of having violated the concordat with the Vatican, ratified Sept. 10, 1933. The papal encyclical of March 14 reinforced his charges in most vigorous terms. During the same month, the Nazi government refused to discuss the religious question with a papal nuncio, and on May 1 Chancellor Hitler uttered a warning that all churches opposing the totalitarian philosophy would be suppressed. By open and subtle means, the freedom of the church was circumscribed, the repute of Catholic leaders was scandalously assailed, Catholic youth organizations were disbanded, and Catholic education forbidden. On almost every occasion when he spoke in public, but most especially at his address to the cardinals on Dec. 24, Pope Pius lamented the German persecution and assailed the Nazi leaders.

The 33rd International Eucharistic congress was opened on Feb. 3 at Manila, Philippine Islands, by Cardinal Dougherty, the papal legate, and was concluded on Feb. 7 with a message broadcast from the Vatican by the pope. National Eucharistic congresses were held throughout the world, notably that of July 11, at Lisieux, France, which was attended by about 300,000 pilgrims. Among the other memorable gatherings were those of the International Congress of Catholic Nurses, London, July 26; the congress of the Jeunesse Ouvrière Chrétienne, Paris, Aug. 2; and the pilgrimage to Aix-la-Chapelle, Germany.

Missions.—Missionary activities of the Catholic Church are carried on among the natives of every continent. India celebrated in December the 50th anniversary of the establishment of the hierarchy. During that period the Catholic population increased from 1,660,000 to 4,000,000. China counts about 3 million Catholics, among whom 1,750 priests labour; they and the religious congregations of women are conducting 415 orphanages, 236 hospitals and homes, and 1,002 clinics. The tendency in the Catholic Church is that of creating a native clergy and religious sisterhood. In Ceylon there are 800 sisters and three religious brotherhoods, entirely Singhalese. The newly formed Prefecture of Zenshu, Korea, is administered entirely by Koreans. Kimberley witnessed the ordination of the first coloured priest in South Africa. The flow of missionaries from Europe, and during the past decade more than ever from the United States, together with the great amount of money contributed for the propagation of the faith in foreign lands, has brought an adequate return in conversions.

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ROMANSCH. According to a decree of the Swiss Federal Council on July 8, 1937, Romansch, an offshoot of Latin, has become the fourth national language of Switzerland. This decision affects some 50,000 inhabitants of the Engadine, the Oberhalbstein, and the Grisons Oberland. It does not, however, change the Swiss constitution, which provides for three official languages (French, German, and Italian) in parliamentary and legal matters.

ROME, the capital (since 1870) and largest city (population, 1936, 1,150,000) of Italy, including within its ambit the independent State of the Vatican City (*q.v.*), is situated on the river Tiber, 17m. from its mouth. The city is to be in 1941 the venue of an International Exhibition, to be held at Tre Fontane, near the Church of San Paolo fuori le Mura, on a site covering about 1,000 acres, and early in 1938 it was announced that the town-planning scheme initiated in 1931 for the extension and modernization of the city is to be implemented and modified so that the city will have largely changed its appearance before the date of the exhibition. An elaborate scheme of underground railways has been prepared, and exploratory shafts have been sunk: the lines proposed run from the central Termini station to the 'Lido', or exhibition grounds, passing under the Palazza Venezia, to the Porta Pia and Piazza Verbano; to St. Peter's and the Viale Angelico; with suburban (partly surface) extensions to Frascati, Albano, Velletri, etc. The railways to the Alban Hills, Rome's playground, are to be electrified, and the Termini station is to be rebuilt 200ft. behind its present frontage line. The exhibition buildings so far as possible are to be of permanent character, so that later they may be retained as part of the scheme of development for the country between Rome and Ostia, which is to be occupied by parks and garden villages. A new airport is projected near the Magliana station; and two new motor roads are under construction connecting the centre of the city and the Trastevere with the exhibition grounds.

Other developments which made progress during 1937 include the restoration of the Mausoleum of Augustus; the construction of the new Corso del Rinascimento which will improve communications between the Piazza Venezia and the Capitol and Prati; the construction of new shops and restaurants in the Trastevere district; and, with the concurrence of the Vatican authorities, the opening-up of the approaches to St. Peter's and the clearance of the Piazza di San Pietro.

ROOSEVELT, FRANKLIN DELANO (1882–), 32nd president of the United States of America, was born at Hyde Park, N.Y., Jan. 30, 1882, a fifth cousin of Theodore Roosevelt. He was educated at Groton School, Harvard University, and the Columbia University Law School. In March 1905 he married Theodore Roosevelt's niece, Anna Eleanor Roosevelt. Franklin Roosevelt practised law in New York; and in 1910 was elected a State Senator as a Democrat. From 1913 to 1921 he was, in the Navy Department, the principal assistant of Josephus Daniels. In Aug. 1921 he was stricken with infantile paralysis, but gradually recovered and, in 1928, was by a large majority elected governor of New York. In 1932 he was elected president of the United States and subsequently, by virtue of special powers granted him by Congress, set about a programme of legislation designed to promote national recovery. In 1936 he was, by a record majority, re-elected president; and on Jan. 20, 1937, he took the oath for his second term of office.

Wide World Photos]

FRANKLIN DELANO ROOSEVELT

On Feb. 5 Mr. Roosevelt asked Congress for reforms in the Federal judiciary, and for authority to increase to 15 the membership of the Supreme Court. He met with considerable opposition in the matter, both from Congress and from the Senate, and in July the Senate rejected the proposed reform of the Supreme Court (*q.v.*) ; but in his Constitution Day speech on Sept. 17 the president hinted at a renewal of his efforts in this direction.

On Sept. 30 he visited Victoria, British Columbia. The evidences of popularity that he received during his subsequent tour in the western States of the Union are believed to have influenced his decision to call Congress in special session on Nov. 15. In a radio speech on Oct. 11 he announced the programme of this special session : wages and hours, agricultural control, Federal reorganization, and regional planning. At a press conference on Dec. 17 Mr. Roosevelt indicated his strong opposition to the war referendum plan. On Dec. 27, in a letter to the chairman of the House appropriation committee, he indicated his intention of asking for a supplemental naval construction. On Dec. 21 the special session had adjourned without taking final action on any of the president's legislative recommendations. (*See* also UNITED STATES OF AMERICA ; STRIKES AND LOCK-OUTS.)

ROOT CROPS. Apart from sugar and potatoes, the acreage under root crops has been declining steadily in Great Britain for many years. They require a great deal of manual labour in proportion to their value ; and since wages have risen, these crops, in particular turnips and swedes, have become less profitable to grow. The following table shows the trend in recent years.

GREAT BRITAIN

	Acreage	Yield per Acre	Total Produce
	000 acres	Tons	000 tons
Turnips and Swedes:			
1926–35 (average) .	999	13·3	13,392
1936 . . .	794	14·5	11,507
1937 . . .	767	12·1 *	9,281 *
Mangolds :			
1926–35 (average) .	277	18·7	5,202
1936 . . .	248	19·1	4,756
1937 . . .	209	17·8 *	3,720 *
Potatoes :			
1926–35 (average) .	627	6·5	4,079
1936 . . .	590	6·5	3,804
1937 . . .	590	7·1 *	4,190 *

* Provisional figures.

Yields per acre of turnips and potatoes are always substantially higher in Scotland than in England and Wales. As a result of the heavy potato crop, prices fell from 181*s.* per ton (King Edward VII, first quality) in Dec. 1936 to 112*s.* 6*d.* per ton in Dec. 1937. The Potato Board continues to control the volumes of supplies by means of (*a*) riddle regulations prohibiting the sale of potatoes below a certain size ; (*b*) by the fine of £5 per acre for increased acreage, and (*c*) by licensing importers.

Other Countries.—In most countries of the continent of Europe, yields of fodder roots (turnips, mangolds, and artichokes) were in 1937 below average. Potatoes, on the other hand, gave a record yield in Germany and elsewhere too.

POTATO PRODUCTION
(Million bushels)

	1937	1936	1931–35
Germany . . .	1,969	1,642	1,542
Poland . . .	1,389	1,260	1,141
France	541	560	577
Europe (excluding the U.S.S.R.) . . .	5,353	4,817	4,571

The European total is the highest for the last 15 years. In the United States, potato yields were high on a smaller than average acreage. In Russia, also, the crop was said to be good. In Germany a certain proportion of potato flour has now to be mixed with wheat and rye flour for all bread, cakes, etc.

For sugar-beet, *see* SUGAR.

ROOT, ELIHU, American lawyer and statesman ; born at Clinton, N.Y., Feb. 15, 1845 ; died in New York City, Feb. 7, 1937. A biography of him is to be found in the *Ency. Brit.*, vol. 19, pp. 542–43. In recognition of his efforts to smooth the path for the United States to join the World Court, he was awarded the American Bar Association medal in 1930. The previous year he had received the gold medal of the National Academy of Design for having drawn the bill creating a National Fine Arts Commission and for reviving L'Enfant's plan for the beautification of Washington.

ROSE, SIR (HUGH) ARTHUR, Bt., D.S.O., LL.D., British social economist ; born in 1875 ; died in Edinburgh, Aug. 14, 1937. He was educated at Harrow and Trinity College, Cambridge. He was for many years active as an educationist in Scotland, being, from 1920 to 1924,

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GATHERING A FINE CROP OF ORANGE KING MANGOLDS AT A FARM IN YORKSHIRE, NOVEMBER 1937 chairman of the Advisory Council to the Scottish Education Department, but his interests were wide and various. He was Food Commissioner for Scotland, 1919–20; director of Land Settlements, Scotland, 1920–22; and chairman of the General Board of Control for Scotland, 1922–36. From 1934 to 1936 he was Commissioner for Scotland under the Special Areas Act. He married, 1901, Mary Weir, and had a son and two daughters. He was knighted in 1919 and created a baronet in 1935. He won the D.S.O. in 1917 whilst in command of the 15th battalion of the Royal Scots.

ROTHSCHILD, LIONEL WALTER ROTHSCHILD, 2nd Baron, F.R.S., British zoologist; born in London, Feb. 8, 1868; died at Tring Park, Herts., Aug. 27, 1937. He was educated at Bonn and Magdalene College, Cambridge, and represented the Aylesbury Division of Buckinghamshire in parliament as a Liberal-Unionist from 1899 to 1910. He became a trustee of the British Museum in 1899, was elected a F.R.S. in 1911, and in 1915 succeeded his father as Baron Rothschild of Tring. Lord Rothschild was known to the public chiefly as the founder and maintainer of the private Zoological Museum at Tring, of its kind one of the completest and best-equipped privately owned institutions in the world. In 1932 the burden of maintaining this museum proved so heavy that he was compelled to sell his collection of birds to the U.S.A. Lord Rothschild was unmarried, and is succeeded, as 3rd Baron, by his nephew, Nathaniel Mayer Victor Rothschild. The late Baron wrote, as well as numerous articles on zoology, *Avifauna of Laysan,* and was joint-editor of *Novitates Zoologicae,* published at the Tring Zoological Museum.

ROUSSEL, ALBERT, French composer; born at Tourcoing, April 5, 1869; died in Paris, Aug. 24, 1937. A biographical notice is to be found in the *Ency. Brit.*, vol. 19, p. 587. His later compositions included: *La Naissance de la Lyre*, 1925, and the ballet, *Bacchus and Ariadne*, 1930.

ROWING. For its chief event, the year 1937 will be remembered for the fact that Oxford brought the long term of 13 Cambridge successes to an end.

Cambridge, early in preparation, suffered a loss of the first magnitude when their president, W. G. R. M. Laurie, accepted a post in the Sudan civil service. A born stroke and an oarsman of the first class, there was no one adequately to replace him. On the other hand, paradoxical though it may seem, the lion's share of the credit for Oxford's victory must be given to their president, J. S. Lewes, who at the end of training was not found good enough to be included in the crew which he had done so much to make.

For the first time for some years, Lewes decided to rely on old Oxford Blues for coaching, and obtained the help of Dr. P. C. Mallam (1921, 1922, 1923, 1924), Mr. G. O. Nickalls (1920, 1921, 1922, 1923), and Mr. W. Rathbone (1926, 1927). The Cambridge coaching was undertaken by Sqdn.-Ldr. F. E. Hellyer (1910, 1911), Mr. J. Beresford, Jnr., of Thames R.C., Mr. J. F. R. Best, the old Pembroke stroke, and Mr. K. M. Payne (1932, 1934). After Laurie's departure, H. W. Mason, the 'two' of 1936, was considered likely to stroke the crew, but he met with an accident during the vacation, and could not row until a month before the race.

Just before the race, changes were made in the bows of the Oxford crew, D. R. B. Mynors (1935) being replaced by R. R. Stewart, and Lewes by D. M. de R. Winser (1935, 1936). The general public saw only fatal indecision in these changes, and Cambridge started favourites. They won the toss and took the Surrey side.

After a false start, Mr. Harold Rickett (Cambs. 1931, 1932), the umpire, got the crews away. Owing to the great amount of land water meeting a slack neap tide, the time was bound to be slow, and a light westerly wind did nothing to assist the crews at any point. At the end of a minute at the higher rate Cambridge had a substantial lead, but Hodgson crept up to lead by a few feet at the Mile Post (4mins. 39secs.). Repeated spurts kept Cambridge on terms, but Hodgson never allowed them to gain more than a few feet. At Hammersmith, in great danger of a foul, the boats were level (8mins. 24secs.). Along the Eyot, Perfitt made several spurts, but Hodgson always drew him back between whiles, and was leading at Chiswick Steps (13mins. 3secs.). After giving way to avoid a foul, the Oxford crew gained steadily up the Duke's Meadows, and were clear at Barnes Bridge (19mins. 34secs.). Though Cambridge spurted all the way home, Hodgson did not raise the rate until the Brewery, and then went away very fast to win by three lengths in 22mins. 39secs.

NAMES AND WEIGHTS

	Oxford	*St.*	*Lb.*
	*M. G. C. Ashby, Oundle and New Coll., bow	12	4
2.	*D. M. de R. Winser, Winchester and Corpus	12	0
3.	R. R. Stewart, Eton and Magdalen . .	13	0
4.	R. G. Rowe, Eton and University . .	12	11
5.	J. P. Burrough, St. Edward's and St. Edmund Hall	13	7
6.	*J. D. Sturrock, Winchester and Magdalen .	14	4
7.	*J. C. Cherry, Westminster and B.N.C. .	13	11
	A. B. Hodgson, Eton and Oriel, stroke .	12	2
	G. J. P. Merifield, King Edward VI and St. Edmund Hall, cox	7	11

	Cambridge	*St.*	*Lb.*
	*T. S. Cree, Geelong and Jesus, bow . .	11	6
2.	*H. W. Mason, Clifton and Trinity Hall .	11	8
3.	M. Bradley, Monkton Combe and Pembroke	13	2
4.	D. M. W. Napier, Eton and Magdalene .	12	9
5.	*M. P. Lonnon, Westminster and Third Trinity	12	11
6.	T. B. Langton, Radley and Jesus . .	13	11½
7.	A. Burrough, St. Paul's and Jesus . .	12	3
	R. J. L. Perfitt, K.C.S., Wimbledon, and Trinity Hall, stroke	12	0½
	T. H. Hunter, Harvard and Trinity Hall, cox	8	0

* Old Blues

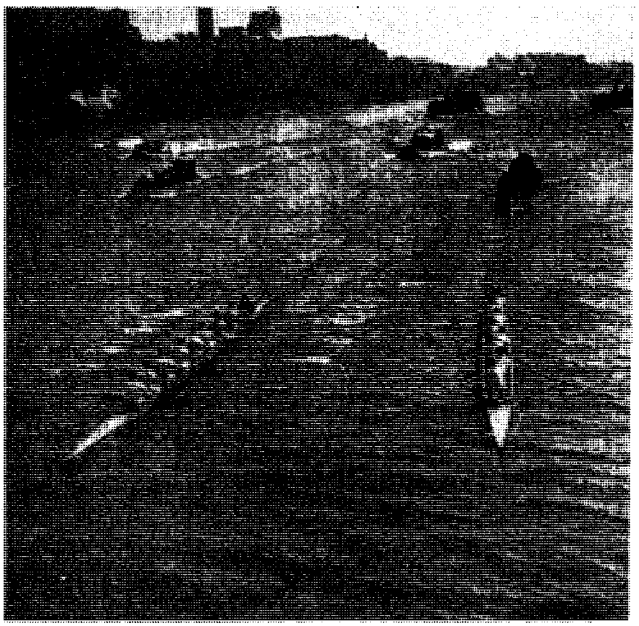
On Easter Sunday, the Oxford and Cambridge crews raced against two Paris crews on the Seine, each of the English crews winning comfortably.

In the Summer Eights at Oxford, Oriel lost the headship to New College, whilst in the Mays at Cambridge, Jesus retained their position.

At Henley Royal Regatta, English oarsmen met with defeat in three events—the Rudergesellschaft Wiking crew from Germany winning the Grand Challenge Cup; J. Hasenohrl, Ruderverein Ellida, Austria, taking the Diamond Sculls; whilst Tabor Academy, U.S.A., won the Thames Cup for the second year in succession.

In their heats the Germans beat New College easily and London R.C. by 2½ lengths, but in the final they were given a splendid race by Jesus College, Cambs., a resident undergraduate crew. At Fawley the English crew had three-quarters of a length, but at the Mile the boats were dead level. In the spurt home the Germans went away to win by half a length in 7mins. 33secs. in a strong head-wind.

Coulson, the Canadian sculler, was undoubtedly Hasenohrl's strongest competitor, and met him in the final of



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THE TWO CREWS SHOOTING HAMMERSMITH BRIDGE DURING THE OXFORD AND CAMBRIDGE BOAT RACE. OXFORD ON LEFT

the Diamonds, but the race was robbed of all interest when Coulson hit the piles above the quarter-mile when leading slightly.

Tabor Academy were not quite as fast as in 1936, when they beat Kent School, U.S.A., in the final of the Thames Cup, and London R.C. 'B' crew were on terms with them to the enclosures, when the American boys went away to win by one length in the fastest time of the day, 7mins. 31secs., the head-wind having dropped considerably. In the other events, Clare, Cambs., won the Ladies' Plate, beating the holders, First Trinity, in the final. Leander, with a good crew, won the Stewards' Cup, whilst Trinity Hall won the Visitors easily from Oriel. London R.C. 'B' crew won the Wyfolds, and E. W. Wingate and W. D. Baddeley, Vesta R.C., won the Goblets.

During the year, the A.R.A. widened the definition of an amateur oarsman by deleting all reference to manual or menial labour as a bar to the status. The stewards of Henley Regatta accepted the alteration, and further deleted their rule forbidding professional coaching. These alterations took effect on Jan. 1, 1938.

In professional sculling, Eric Phelps retained the title of champion of England, and won a stake of £200 from Lou Barry in a race from Putney to Mortlake on March 29. There was a splendid struggle to Chiswick Steps, but after that Phelps went away to win by five lengths in the slow time, due to bad conditions, of 24mins. 50secs. (G. C. D.)

United States.—The 1937 intercollegiate season opened on April 17 with the 34th annual California-Washington regatta on the Oakland estuary in California, and an informal race between Columbia University and Manhattan College in New York City. Washington, for the second successive year, won the varsity, junior varsity, and freshman races by wide margins, the crew being, except for two positions, the same as that of 1936, which won the Pacific Coast and Poughkeepsie regattas and the Olympic championship at Berlin. Columbia likewise opened with a clean sweep over their less-experienced Manhattan opponents.

The Eastern college rowing season opened officially on April 24 with three regattas. The Naval Academy crews won sweeping victories at Annapolis over Columbia in the varsity, junior varsity, and freshman races. The annual Compton Cup regatta between Harvard, Princeton, and the Massachusetts Institute of Technology was won by Harvard on Lake Carnegie in a very close race. Rutgers defeated Manhattan on the Raritan River. The Blackwell Cup race was held on May 1 on the Harlem River, and Yale won by several lengths.

On May 15 the Childs Cup regatta was won by Princeton, and on the same day Harvard held its undefeated position by vanquishing Cornell, Syracuse, and Massachusetts Institute, thus scoring its fourth consecutive victory. The following Saturday, May 22, Yale finished its short-distance season undefeated, winning the Carnegie Cup race over Princeton and Cornell. The Princeton crew continued its fine performance of the previous week, and gave Yale a close race over the entire two miles on the Housatonic, losing by half a length. In the Adams Cup race, a fitting climax for the Eastern short-distance racing season, the undefeated crews of Harvard and Navy were pitted against each other in a triangular race which included Pennsylvania. Shortly after the start, the two favourites were on practically even terms and paying little attention to Pennsylvania, which had surprisingly gone out to half a length lead. Against two such powerful crews, Pennsylvania had wisely determined to take the lead at all costs. A half-mile from the finish they still retained their lead, but shortly thereafter the pace proved too much and Navy slowly forged into the lead, closely followed by Harvard. Rowing a much lower stroke, Navy warded off the high stroke of the Harvard sprint, and crossed the finishing line slightly ahead. That same day at Ithaca, Syracuse defeated Cornell in a close race by one length.

The Poughkeepsie Race.—Seven varsity crews lined up at the start of the annual Poughkeepsie race in the late afternoon of June 22. True to predictions, the race soon settled into a battle between Navy and Washington, but by the half-way mark Washington had firmly established a lead, and from there to the finish drove steadily ahead. Navy, in trying desperately to hold them, were nearly overtaken in the closing minutes by a fine Cornell crew. Washington crossed the line the winner by about three lengths, and in this victory established a record not equalled in the history of the Poughkeepsie regatta, making a clean sweep of the three races for two consecutive years. The other crews, in the order finished, were Syracuse, California, Columbia, and Wisconsin.

Yale-Harvard Regatta.—The 75th Yale-Harvard regatta brought to a close the intercollegiate rowing season. On June 25 the two varsity crews lined up near New London, on the Thames, for the four-mile race up-stream. Harvard was the favourite by virtue of its easy victory over Yale the year before, but a greatly improved Yale crew, which had come through the short-distance races undefeated, promised a close and stirring race. Yale took the lead at the start but soon relinquished it, and by the half-way mark Harvard, rowing several strokes slower and leading by nearly two lengths, looked an easy winner. Coming into the three-mile mark, Yale began cutting down this lead and, half a mile from the finish, was lapping the stern of the Harvard shell. Over the last quarter-mile both crews raised their strokes to nearly 40 to the minute, and Harvard slowly forged ahead again to finish slightly more than a length in front of the game Yale crew. Both crews broke the course record under fair conditions. (E. O. Le.)

ROYAL ACADEMY OF ARTS (IN LONDON).

During the year (from Nov. 1936), the following elections were made: Royal Academicians (R.A.)—F. Cadogan Cowper, Dame Laura Knight, Gilbert Ledward, Sir Edwin Cooper, Gerald Brockhurst (all previously A.R.A.s.); Associates (A.R.A.)—Charles Cundall, Eric Gill, Stephen Gooden, James Woodford, C. H. James. The annual Summer Exhibition at Burlington House, Piccadilly, London (169th; May 3–Aug. 7; 722 oil-paintings, 367 water-colours and miniatures, 168 sculptures, etc.), attracted 102,000 visitors. A coronation year feature was an historical series, 'Royal Patrons of the Royal Academy', with *H.M. King George VI*, by Simon Elwes.

Though representative of current trends in technique, the exhibits included no work of a dozen or more representative British artists, such as W. R. Sickert and Stanley Spencer, who had resigned from the Academy, Wilson Steer, Paul Nash, and Jacob Epstein. There is a growing tendency for artists to exhibit in London galleries. Even some leading painters seem, to-day, to take the composition and lighting of posed subjects as they happen to come. Perhaps accordingly, landscapes were a step in advance of portraiture in interest; still life and nudes were out of favour. While there was, by general consent, no 'picture of the year', *The Founding of Australia by Captain Arthur Philip, R.N.*, by Algernon Talmage, R.A., drew much attention. Many of the smaller pictures repaid contemplation.

At the banquet, the Duke of Kent, chief guest, said: 'we are apt to belittle British art and artists'. Sir William Llewellyn, president since 1928, announced that the Winter Exhibition (Jan. 3–March 12, 1938) would be of seventeenth-century European Art.

An innovation was the architectural exhibition, held at Burlington House during the autumn—virtually a review of leading designs of the present century. (H. Fw.)

RUANDA AND URUNDI: *see* BELGIAN CONGO, THE.

RUBBER AND RUBBER MANUFACTURE.

The two main sources of plantation rubber, Malaya and the Netherlands East Indies, now produce between them some 80 per cent. of the world's supply, which in 1937 totalled 1,134,198 tons as compared with 11,000 tons in 1910. The principal markets are Singapore, London, and New York.

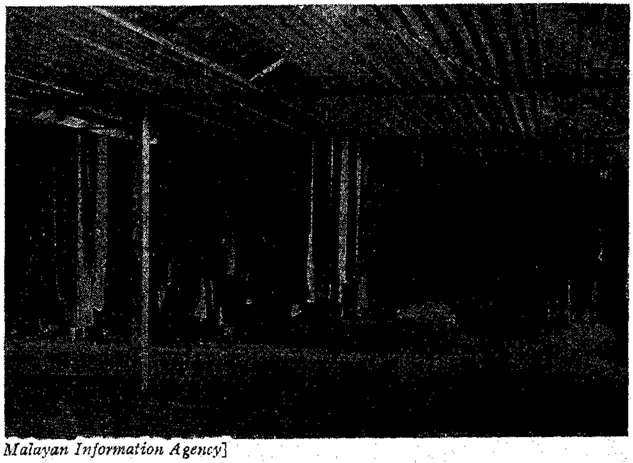
Since 1934, the production of rubber has been under the control of an International Rubber Regulation Committee, whose declared objectives are to regulate production and exports, adjust supply to demand, and ensure a fair and equitable price to both producer and consumer. The first declared objective was realized a little over two years after the inception of the scheme, since when the committee has turned its attention to the other important part of its function. It is now proposed to renew the control of production until the end of 1943.

Despite the wide fluctuations which appeared on the price-graph, 1937 may be considered as a good year for the industry. The average price over the year was $9\frac{15}{32}$*d.* per lb. against 7¾*d.* for the previous year, and the permissible exportable amount 83¾ per cent. of basic quotas, against 62½ per cent. for 1936, showing larger exports with higher prices. The highest price paid for spot rubber in London in 1937 was 1*s.* 1¾*d.* per lb. in March, and the lowest 6¾*d.* in November, consequent upon the recession in American business activity. During 1937, world consumption totalled 1,092,078 tons, of which the U.S.A. absorbed 542,947 tons and the United Kingdom 113,108 tons. Approximately 80 per cent. of the world's consumption is used by the motor industry. (X.)

Technology.—The most notable development of new material in the rubber industry was the expansion in Germany of manufacturing facilities for the synthetic elastic, Buna. It is claimed that varieties of Buna have proved superior to natural rubber in resistance to abrasive wear, oil, heat, and diffusion of gases, and it is predicted that further increased production will reduce its cost to a competitive level. Only recently have these synthetics been made available outside Germany. The artificial rubber Neoprene was produced in Britain on a commercial scale in 1937, while in the United States improvements in both Neoprene and Thiokol have promoted their use in services for which their striking resistance to oils, solvents, or sunlight oxidation render them superior to rubber. Uses with rubber of the chemically inert poly-isobutylene have also been developed. Koroseal, plasticized gamma polymer of vinyl chloride, has found new applications where sufficient resistance to oils, corrosive chemicals, or water and non-inflammability could not be attained by rubber compounding. In Germany, also, similar products have been utilized extensively. Neoprene and Koroseal have interested cable manufacturers as insulators highly resistant to ozone. Of scientific interest was the description from France of an inorganic rubber-like material consisting of polymers of phosphonitrile chloride. Shipping of pellet carbon black in bulk instead of package is increasing, producing savings in handling costs. New softeners for rubber, acids produced by oxidation of petroleum, have also

Malayan Information Agency]

COLLECTING LATEX ON A RUBBER ESTATE IN MALAYA



Malayan Information Agency]

SHEETS HANGING IN A SHED READY TO BE SMOKED been introduced. Patents issued in various countries evidence continued research and accomplishment in the study of organic accelerators and age resistors. Additional accelerators inert at milling heat but rapidly active at vulcanizing temperatures have been discovered. Notable, too, was the discovery of an age resistor, hydroquinone mono benzyl ether, non-staining on exposure to light, which imparts to rubber compositions excellent flexure resistance in addition to retarding their deterioration.

Processing.—Researches in plastication of rubber have resulted in improving this important operation. Plasticators are now designed for operation at temperatures much higher than were formerly employed, producing rubber of greater plasticity at lower cost. Chemical softening by addition to the rubber, during plastication, of small proportions of certain hydrazines or thionaphthol has proved valuable also. For rubber cements, a new type of closed mixer, in which a swirling motion is imparted by propeller-type stirrers, top and bottom, greatly reduces solvent losses and speeds the dispersion of rubber. For forming articles from Neoprene, dispersion methods have been perfected similar to the Anode process for deposition of rubber from latex.

Products.—As in former years, the usefulness of rubber has extended into new fields. New or increased uses were developed as package wrappings, bottle seals, rain capes, and umbrellas. Elimination of noise and vibration by supporting machinery on rubber in shearing suspension has proved effective. The use of sponge rubber for cushioning seats, first adopted in Great Britain, has increased rapidly in America. For petrol hose-piping, linings of Neoprene containing embedded wires to ground static charges largely replaced in manufacture the older flexible metal tubes with rubber sheaths.

Rubber plates for printing food wrappers, telephone directories, and business forms have found increasing use. The utility of transmission belting has been increased through the invention of a portable vulcanizer and a special splicing technique enabling purchasers to make belts endless wherever they are to be used. A long-standing need for improved sealing of bell and spigot joints in clay pipe is now satisfied by rubber rings, which hold without leakage against pressures capable of bursting the pipe. Rubber sealing strips for joints in concrete roads or abutments overcome disadvantages of poured fillers. Substitution on tractors of the many-jointed metal bands by endless rubber tracks permits faster travel, decreases wear, and increases fuel economy. Rubber putty, permanently flexible, has proved valuable for greenhouses and other metal sash windows where expansion or vibration causes ordinary putties to crack and loosen. (*See* also CHEMISTRY, APPLIED; INDUSTRIAL RESEARCH; GERMANY: *Economic Nationalization and Synthetic Products.*) (J. W. Sc.)

RUBIO I LLUGH, ANTONI, Spanish Catalan scholar; born at Valladolid, July 24, 1856; died at Barcelona, June 9, 1937. He was for 41 years Professor of Spanish Literature at the University of Barcelona; and since 1904 was Professor of Catalan Literature at the Institute of Catalan Studies. One of the finest Catalan scholars who have lived, his most enduring monument is, perhaps, the *Documents for the Study of Mediæval Catalan History.*

RUMANIA (*România*), a monarchy of S.E. Europe and member of the League of Nations. Bounded W. by Hungary, N.W. by Czechoslovakia, N. by Poland, E. by the U.S.S.R., S.E. by the Black Sea, S. by Bulgaria, S.W. by Yugoslavia. Ruler, King Carol II. Flag, blue, yellow, and red in vertical stripes.

Keystone View Company]

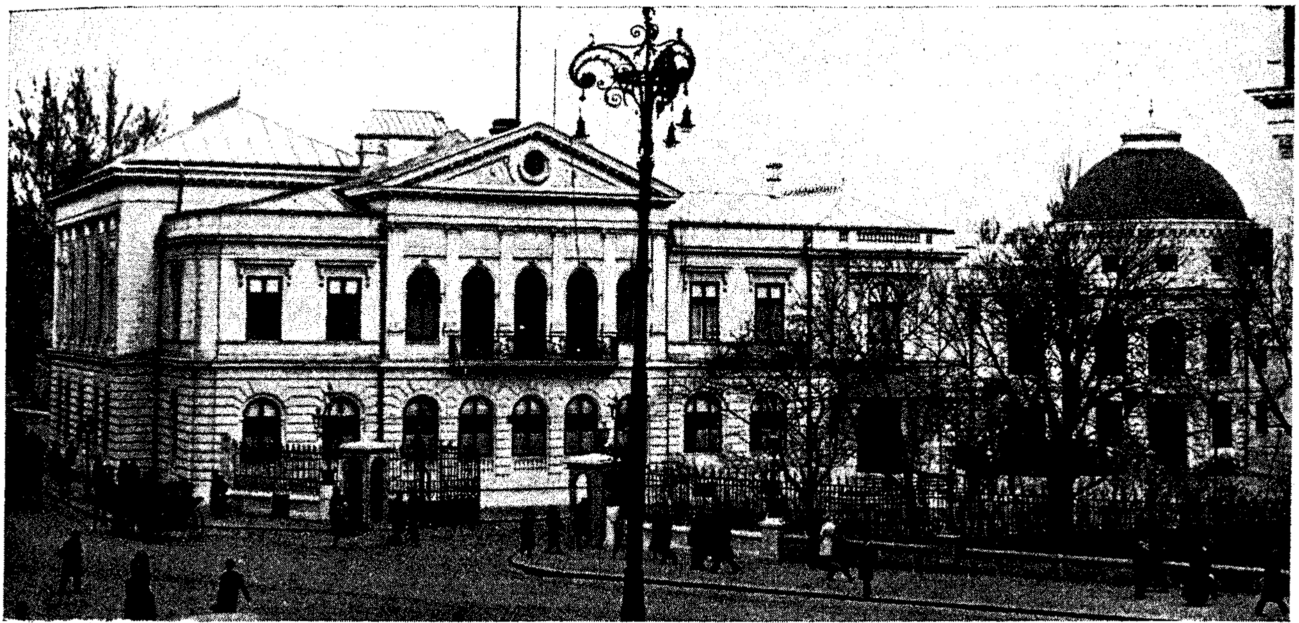
VIEW OF LA CAISSE D'ÉPARGNE, BUCHAREST

Area and Population.—The area is 113,884sq.m.; estimated population (1936), 19,423,000. Of these, about three-quarters are Rumanians, and members of the Orthodox or (in the case of a part of the Transylvanian Rumanians) the 'Uniate' Church. The Magyars (Catholic, Protestant, and Unitarian) number about 1,500,000. They live chiefly in Western Transylvania and the 'Székely' districts of E. Transylvania. The 750,000 Germans are chiefly in the Banat (Catholic) and Transylvania (Lutheran). The 5–600,000 Ukrainians, 1–200,000 Russians, and perhaps 250,000 Bulgars inhabit Bessarabia and the Dobruja. The Jews (about 1,000,000) are chiefly in Moldavia and Bessarabia, but not rare in any part of the country.

The chief towns, with estimated population (1936) are: Bucharest, 641,421; Chișinau, 114,954; Cernauți, 110,609; Jași, 104,523; Galați, 102,106; Cluj, 99,496; Timișoara, 99,349; Oradea Mare, 81,413; Ploeșt, 76,773; Arad, 76,333; Brãila, 68,981; Brașov, 60,556.

Education is free and compulsory. In the Old Kingdom, it is in the hands of the State; the national minorities in Transylvania are allowed to use the Confessional system.

Political History.—A swing towards 'fascism' of some sort has been apparent in recent Rumanian politics. The resignation of M. Titulescu as foreign minister (Aug. 29, 1936) inaugurated a period more sympathetic to Germany and Italy and even more cautious towards the U.S.S.R. Although Rumania still held by the Little Entente, her relations with Poland, marked by many exchanges of visits, grew closer. In internal politics, an increasing agitation, directed mainly against Jews, but also against the other national minorities, was conducted by the parties of the extreme Right, under the slogan 'Rumania for the Rumanians'. In Dec. 1937 general elections were held, and although they were conducted by the Liberal Party, that



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THE ROYAL PALACE AT BUCHAREST

party, in alliance with the Rumanian Front, the National Democrats, and the Germans, secured—to the general astonishment—only 152 seats out of 387, the National Peasants securing 86, the 'All for the Fatherland' (the proscribed 'Iron Guard' under another name) 66, the National Christians 39, the Magyars 19, the Dissident Liberals 16, and the Radical Peasants 9. More surprisingly still, the King entrusted the government to M. Goga, the leader of the National Christians, who on Dec. 29 formed a cabinet consisting of members of his own party, with 4 National Peasants, who were promptly expelled by their own party. M. Codreanu, leader of the 'All for the Fatherland', expressed his sympathy. The year closed amid great uneasiness among many sections of the population, particularly the Jews.

Trade, Communications, Finance.—The monetary unit is the leu, nominally equal to 0·5982 gold cents, but now considerably depreciated. The budget was balanced in 1936–37 at 29,872·4 million lei, and for 1937–38 a balanced budget of 28,698·2 million lei was estimated. The foreign trade has recently increased rapidly, with a large export surplus (1935, imports 10,847,530 million lei; exports, 16,756,223 million lei). The chief exports are petroleum and wheat. Agriculture remains the backbone of the national economy. The young industry is being fostered by protection; the average of industrial employment for 1936 was 153 (average 1925–29, 100). Industrial unemployment is low; wages are, however, exceedingly small.

Defence.—Military service is compulsory and universal. The budgetary effectives of the army in 1937–38 numbered 14,890 officers and 49,525 other ranks. Rumania is re-equipping her army, and in 1937 placed large orders for that purpose with Czechoslovakia. A line of fortifications is planned to extend round the entire country.

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RUNCIMAN, WALTER RUNCIMAN, 1st Baron of Shoreston, British shipowner; born July 6, 1847; died at Newcastle-on-Tyne, Aug. 13, 1937. He went to sea before the mast as a boy, obtained his master mariner's certificate in 1871, and gradually acquired his own fleet of ships. Eventually he founded, and was senior partner of, Walter Runciman & Co., Ltd., of Newcastle-on-Tyne, was chairman and managing director of the Moor Line, and, in 1935, became chairman of the new Anchor Line. From 1910 to 1911 he was president of the Chamber of Shipping of the United Kingdom. From 1914 to 1918 he was Liberal M.P. for Hartlepool. He was created a baronet in 1906, and was raised to the peerage in 1933. He married, in 1868, Ann Margaret Lawson, who was Liberal M.P. for St. Ives, 1928–29, and died in 1933. Their only son is the present Viscount Runciman. Lord Runciman's publications include *Windjammers and Sea Tramps*, 1903; *The Shellback's Progress in the 19th Century*, 1905; *Looking Seaward Again*, 1907; *The Tragedy of St. Helena*, 1911; *Drake, Nelson, and Napoleon*, 1919; *Before the Mast—and After*, 1924 (autobiography); *Collier Brigs and their Sailors*, 1927; and a series of *Sunbeam Logs*.

RURAL ELECTRIFICATION. Extensive construction of new rural electric lines marked the progress of rural electrification in 1937. In Great Britain progress resulted from the gradual extension of rural electric distribution lines. It is estimated that a total of 30,000 farms were receiving electricity in 1937. This figure may be contrasted with 25,000 in 1936 and 4,000 in 1932. As there are nearly 450,000 farms and small-holdings of over one acre, it will be seen that only a small proportion of the total are as yet connected.

Various demonstration schemes reported increasing success in securing additional customers and in increasing the average consumption per customer. A number of new proposals were advanced for the supply of electricity in undeveloped portions of the areas of supply of various undertakers, and approved proposals were advanced during the year.

The record of existing rural lines in Great Britain, and the lessons learned from pioneering work in rural electrification, are making it possible to consider with confidence comprehensive plans for the extension of rural electric lines. Engineering difficulties have been overcome, and there is a more general appreciation of the financial feasibility of rural electric development when reasonable time is allowed for a development period, and when all costs, including construction and operation, are kept low and free from extraneous charges of all sorts.

In the United States, during 1937, more than 225,000 rural families received electric service for the first time and more than 150,000 of these new customers were farm families. This indicates a gain of approximately 50 per cent. over the number of farms electrified in 1936. At the end of 1937, about 1,200,000 or 18 per cent. of the farms of the United States were electrified. The rural electrification programme of the Federal government stimulated construction by the private utilities to such an extent that they expected to build in 1937, 41,000m. of rural distribution lines—9,000m. more than they constructed in 1936. Projects financed by the Rural Electrification Administration completed about 15,000m. of new rural distribution lines during the year, and had approximately 50,000m. more under construction.

Prior to the Federal government taking an active part in assisting the farmer to secure electricity, practically all farms served with electricity were served by private utilities. As a result of the activities of the Tennessee Valley Authority and those of the Rural Electrification Administration, a small but increasing percentage of farms are being served by farmer-owned and controlled distributing systems. During 1937, important modifications in State statutes, in new rulings of public service commissions, and in government loans contributed to this trend.

Increasing emphasis during the year was placed upon developing increased use of electricity in rural areas. Education of the farmer in the many advantageous uses of electricity made him desire its more abundant use, and somewhat lower rates made it possible for him to gratify this desire. The increases reported in the sales of electric appliances in rural areas provide evidence of an increase in the average consumption per customer during the period.

RUSSIA : *see* U.S.S.R.

RUSSIAN LITERATURE. The commemoration in 1937 of the centenary of Pushkin's death consecrated the recent tendency towards a revaluation of literary and artistic values in a sense hostile to revolutionary modernism. It gave rise to a vast literature of a biographical, historical, and critical character.

The slogan of 'socialist realism', proclaimed in the U.S.S.R. since 1932, continues to preside over Soviet literature. The actual literary output during 1937 has been rather scanty: a new novel by Ehrenburg on the topical subject of the Spanish civil war, *Chto cheloveku nado* (*What Man Needs*); a short novel by Valentin Kataev, *Ya, syn trudovogo naroda* (*I, Son of the Toiling People*), dealing with the civil war in the Ukraine in 1918–19; Pavlenko's much-discussed and greatly praised *Na Vostoke* (*In the East*), a kind of military Utopia describing Soviet activities in the Far East and the future war with Japan; the fourth volume of Sholokhov's *Tikhy Don* (*The Quiet Don*); Alexei Tolstoy's *Khleb* (*Bread*), retrospective in subject but topical in its glorification of Stalin and Voroshilov; and the first two parts of Tynyanov's *Pushkin*, a novelized biography—such is the balance-sheet of the year's notable fiction. Nor has anything outstanding appeared in the domain of poetry and drama. One of the features of the year's literary life has been the official press campaign against a number of poets, playwrights, and critics, including the leading Soviet Russian poet, Boris Pasternak, who has been attacked for his individualistic, non-political, and unpatriotic attitude. Other victims came from the opposite camp, as *e.g.* the poets Bezymensky (who at one time aspired to the rôle of the Soviet poet-laureate) and Tretyakov (author of the well-known propaganda play *Roar, China!*), and the playwrights Afinogenov and Kirshon, whose popularity was extremely great during the period of the first Five-Year Plan. Afinogenov, Bezymensky, and Kirshon, in connexion with the political drive against 'Trotskyism', have been expelled from the Communist Party. The 'anti-modernist' (or, in Soviet terminology, 'anti-formalist') campaign, begun in 1936 at Stalin's personal initiative with the attacks on the well-known composer Shostakovich, culminated in Dec. 1937 in the 'disgrace' of the famous theatrical producer, Meyerhold.

Four writers—Korniychuk, Sholokhov, Stavski, and Alexei Tolstoi—had the honour of being elected to the new Soviet parliament.

Three prominent men of letters died in the U.S.S.R. during 1937: Alexei Chapygin (*b.* 1870), author of the historical novel *Razin, Stepan*, and other works; Ilya Ilf, joint author with Evgeny Petrov of two successful satirical novels (*Twelve Chairs* and *The Golden Calf*), and of numerous short stories; and Suleiman Stalsky (*b.* 1869), the *ashug*—or national bard—of Daghestan.

Almost the only outlet of Russian literature outside Russia is the sole surviving émigré review—*Sovremennya Zapiski* (Paris). Among the individual fiction works of the year may be noted Aldanov's *Peshchera* (*The Cave*); the first instalments of Nabokov-Sirin's *Dar* (*The Gift*); and Boris Zaitsev's *Puteshestvie Gleba* (*Gleb's Journey*), the first part of a vast work of obviously autobiographical nature, somewhat akin to Bunin's *Life of Arsenyev* (*The Well of Days*).

By the sudden death, in Paris, of Evgeny Zamyatin (*b.* 1884) Russian literature has sustained a heavy loss. Zamyatin, whose longest work—the novel *My* (*We*)—has the rare distinction of not having been published in the original, although it has appeared in several translations, was one of those writers who exercised a considerable influence on the development of post-revolutionary Russian literature.

The return to the U.S.S.R. of the well-known novelist Kuprin was the first case of its kind since the return of Alexei N. Tolstoy in 1922. (G. St.)

RUSSIAN SOVIET FEDERATED REPUBLIC, THE ('R.S.F.S.R.'), is in area and population the largest, and politically, economically, and culturally the most important republic of the Soviet Union; bounded N. by the Arctic Ocean; W. by Finland, Estonia, Latvia, White Russia, and the Ukraine; S. by the Black Sea, the Transcaucasian Republics, Kazakhstan, Mongolia, Manchukuo, and Japan; E. by the Pacific Ocean. Capital: Moscow. Flag: red ground, gold initials РСФСР in top left corner. Leading cities: Moscow (1936) 3,567,900 inhabitants, Leningrad (1935) 2,739,800, Gorki (formerly Nizhni-Novgorod) 512,600, Rostov-on-the-Don 479,400, Sverdlovsk (formerly Ekaterinburg) 450,000, Stalingrad (formerly Tsaritsyn) 390,000, Saratov 340,000, Novosibirsk (formerly Novo-Nikolaevsk) 310,000 inhabitants.

Area and Population.—Area: 16,499,000sq.km. (about 78 per cent. of the whole Soviet Union), including the most varied natural zones: the tundra, the forest, steppe, and desert zones. Population (1937): 113·6 millions, of whom 73·4 per cent. are Russians, 7·8 per cent. Ukrainians, and 2·8 per cent. Tatars.

There were, in 1936, 107,500 schools; and the total number of scholars (1936/7) was 17,658,000.

History.—After the adoption of the new All-Union constitution on Dec. 5, 1936, which aimed at the democratization of the State structure of the U.S.S.R., the R.S.F.S.R. at its 17th Extraordinary All Russian Soviet Congress in Moscow on Jan. 21 also adopted a correspondingly revised constitution. At present 17 autonomous republics, 6 autonomous territories, and 5 territories belong to the R.S.F.S.R. The number of other administrative units—the provinces—has been increased by several decrees to 27 in Sept. 1937. The R.S.F.S.R. took fourth place in the elections to the Supreme Council of the U.S.S.R. on Dec. 12 with a percentage of 96·8. In the autumn of 1937, a drastic purge of State and Party took place. The war hitherto carried on against class enemies was now turned against the élite of the officialdom and the Party who were suspected of counter-revolutionary activity and betrayal of the people. One of the first to be imprisoned in R.S.F.S.R. was the premier of the Republic, D. Sulimov. A. I. Bubnov, for many years People's commissar for education, was another member of the Lenin Old Guard to be deprived of his office for 'incompetence and harmful work'. In the individual autonomous republics attached to the R.S.F.S.R., such as Buryat-Mongolia, Karelia, and Chechen-Ingush A.S.S.R., many of the leading personalities have fallen victims to the drive against Trotskyists, wreckers, spies, etc.

Planet News]

R.S.F.S.R. AT THE ENTRANCE TO THE NEW THEATRE BUILT IN ROSTOV-ON-DON

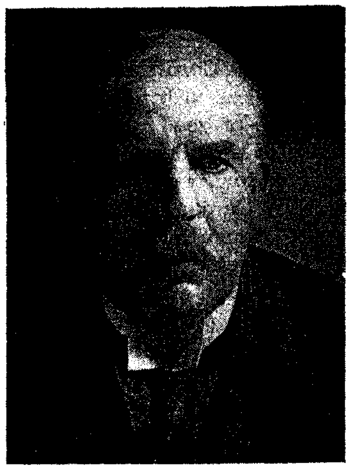
Trade and Communications.—*Agriculture.*—Sown area (1936), 353,874sq.m.; 92·6 per cent. peasant households collectivized. Grain production (all kinds) is chiefly in the black earth region of Central European Russia, on the Central Volga, in North Caucasus, Don Territory, and West Siberia; other products are sugar beet, potatoes, flax, fruit, and tobacco (Black Sea). Cattle and dairy farming are also practised.

Natural resources include iron-ore, coal, oil, gold, platinum, copper, zinc, lead, peat, timber, furs, fish, water power.

Commerce and Industry.—Retail trade turnover (1936) was 68·3 milliard roubles. Export articles: machines, chemicals, textiles, oil, metals, grain, sugar, potatoes, flax, vegetable oil, fruit, fish, cattle, dairy products, timber, matches, paper, furs, building materials, etc. Output of industry (1936, at prices 1926/27): 56,495 million roubles. Output of electricity: 21,419 million kilowatt-hours.

Main industries: coal and iron mining, gold-mining, oil industry, machine building, metallurgy, chemicals, timber, textiles, food, building. Length of railways (1936), 60,963km.; length of navigable rivers (1935), 69,453km. (S. YAK.)

RUTHERFORD, ERNEST RUTHERFORD, 1st Baron, O.M., F.R.S., British physicist; born at Nelson, New Zealand, Aug. 30, 1871; died at Cambridge, Oct. 19, 1937. For details of his career *see Ency. Brit.*, vol. 19, p. 773. He was president of the Royal Society, 1925–30; chairman of the Advisory Council of the Department of Scientific and Industrial Research, 1930–37; and director of the Royal Society Mond Laboratory, Cambridge, 1936–37. In 1931 he was raised to the peerage, taking the title of Baron Rutherford of Nelson and Cambridge. When, in 1933, German scientists and scholars began, for racial reasons, to lose their posts, Lord Rutherford was a founder and the first president of the Academic Assistance Council, since renamed the Society for the Protection of Science and Learning. Chief among his later publications was *Radiations from Radio-active Substances* (1930, with James Chadwick and C. D. Ellis).



Elliott & Fry, Ltd.]

THE LATE LORD RUTHERFORD, O.M., F.R.S.

RYKOV, ALEXEI IVANOVICH (1881–1938), Russian politician. A biographical notice may be found in the *Ency. Brit.*, vol. 19, p. 781. A member of the Politburo from 1919, in 1929 his opposition to the full policy of collectivization brought about his expulsion from the party, though, on his recantation, he was speedily readmitted, and in 1930 was allotted the comparatively minor post of commissar of Posts and Telegraphs. He held this office till the end of Sept. 1936, when, being suspected of Trotskyist sympathies, he was imprisoned, as also was Bukharin (*q.v.*). In March, 1937, they were both tried by the Central Committee of the party, and, refusing to confess to anti-Soviet activities, were found guilty of betraying the Communist cause and intriguing with the enemies of the workers, and Rykov was again expelled. On March 15, 1938, both Rykov and Bukharin were executed.

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SAHARA, THE: *see* French West Africa and the Sahara.

ST. HELENA and ASCENSION ISLAND. These two South Atlantic islands form a British crown colony. St. Helena lies in S. lat. 15° 55′ and W. long. 5° 42′, and Ascension Island is 700 m. to the N.W. The governor and commander-in-chief is Henry Guy Pilling, C.M.G., and the capital is Jamestown in St. Helena.

Area and Population.—St. Helena has an area of 47sq.m., and a population of 3,995; Ascension Island is 34sq.m. in area, and has a population (1931 census) of 188. The chief towns are Jamestown (1,529), and George Town in Ascension Island. The sole inhabitants of the smaller island are employees of Cable and Wireless, Ltd., which has a station there. There are 8 elementary schools.

Trade, Communications, etc.—There is monthly communication by Union Castle steamer. St. Helena has 60 miles of good roads. The experimental export of lily bulbs is promising. In 1936, 850 tons of fibre and 426 tons of tow were exported at £17 and £13 a ton respectively. Garden produce supplied to ships amounted to £578. Imports for 1936 were £1,388.

Revenue for 1936, including a Treasury grant of £23,198, was £3,748 in excess of estimates, owing chiefly to sales of coronation postage stamps. Expenditure was £19,569.

ST. KITTS: *see* Leeward Islands.

ST. LOUIS, a city in the State of Missouri, covering an area of 61·3sq.m., with 856,000 persons living within its corporate limits; an additional 211,593 persons reside in St. Louis county, an area of 487sq.m., as well as 315,000 persons resident in Madison and St. Clair counties, Illinois, immediately across the Mississippi river and a real part of the metropolitan district known as Greater St. Louis.

Among the more important public buildings constructed during the year were the United States Post Office and the Municipal Soldiers' Memorial. A new super-highway was completed, and work was begun on the Bliss Psychopathic Institute. Both Washington University and St. Louis University added chairs in science and arts to their curricula. The St. Louis Symphony Orchestra, under the baton of Vladimir Colschmann, gave its fifty-eighth season of concerts.

Among the more important legislative enactments was the passage of a new and stringent anti-smoke ordinance designed to free the city from unnecessary smoke and dirt, and the adoption of a new milk ordinance complying with the United States Public Health Standard.

ST. LUCIA: *see* Windward Islands.

ST. PIERRE AND MIQUELON, a French colony comprising St. Pierre, Miquelon, and six smaller islands near Newfoundland; capital, St. Pierre (pop. 3,396). The area is about 93sq.m.; pop. (1936 census) 4,175, a decline of 158 since 1931. The colony is governed by an administrator and partially elected council. St. Pierre is a regular port of call for several British and French transatlantic lines, and enjoys excellent cable and radio communication. The sole industry is fishing, for which the islands are an important centre. The trade has, however, seriously declined in recent years, with consequent acute economic depression. Exports in 1936 totalled 38,679,000 francs, imports 13,683,000, against 51,351,000 and 27,995,000 francs respectively in 1935. From 1925 to 1933, the lowest total volume of external trade was 237,004,943 francs (1925), the highest 680,196,637 (1930). Imports, primarily wines, foodstuffs, and miscellaneous supplies for fishing vessels are supplied chiefly by Canada, the United States, and France. The decline is attributable to several factors: unsettled world trade, revaluation, and the loss of the formerly profitable liquor trade with the United States. Efforts begun in 1935 to better the colony's economic condition were continued in 1937, when provisions were made for loans to shipping interests, but a 2-million franc deficit for 1937 was officially forecast. The monetary unit is the French franc, but United States, Canadian, and Newfoundland dollars circulate freely. State primary education is supplemented by two parochial secondary schools.

ST. VINCENT: *see* Windward Islands.

SAKHALIN, a long, narrow island in the North Pacific, area 24,560sq.m., belonged to Russia until the Russo-Japanese War of 1904–05. Under the terms of the Peace of Portsmouth the island was divided into two approximately equal sections, the southern part being assigned to Japan, while Russia retained the northern. The 50th degree of latitude represents the boundary line. Japan occupied North Sakhalin during the period of civil war and foreign intervention in Russia. Soviet sovereignty was established in North Sakhalin in 1925 as part of the general agreement for the establishment of normal diplomatic relations between Japan and the Soviet Union. At the same time, Japanese companies received long-term concessions for the exploitation of oil and coal deposits in North Sakhalin. There have been frequent disputes about the interpretation of these concessions agreements; but there has been no border friction, as along the Manchukuo-Soviet frontier. North Sakhalin has been included in the general Soviet plans for an industrialized and self-sufficient Far Eastern Territory, and emigration to this remote outpost of the Soviet Republics has been encouraged. Japan has been equally energetic in developing its part of Sakhalin. The forests have, indeed, been too ruthlessly exploited; and destructive fires, encouraged by the dry summer climate, have depleted the timber stands which supply pulp for Japan's large paper industry. There are valuable fisheries of herring, trout, salmon, cod, shellfish, and other marine products, and the reserves of coal are estimated as high as 1,500 million tons, although present annual output is only a little over 1 million tons. The Mitsubishi Company is carrying on experiments in distilling oil from coal at Naihoro, on the western coast of Sakhalin. Colonization from Japan proper is encouraged, but with only moderate success. The population of the Japanese part of Sakhalin is about 336,000. (W. H. Ch.)

SALVADOR, EL, a republic on the Pacific coast of Central America; language, Spanish; capital, San Salvador; president, General Maximiliano Hernández Martínez. The area is 13,176sq.m. The population (June 1937 census) was 1,631,967, of whom 621,907 were urban residents. The leading cities, with 1930 populations, are: San Salvador, 96,447; Santa Ana, 75,860; San Miguel, 40,349; Nueva San Salvador, 30,447. The dominant note in El Salvador in 1937 was one of stringent economy. In February a trade reciprocity agreement with the United States was signed. In July, the government announced withdrawal from the League of Nations 'for financial reasons' (effective in 1939). In September the president-dictator stirred great enthusiasm when he formally enunciated the policy of never contracting a new loan. Salvadorean imports totalled 20,122,963 colones and exports 25,251,170 colones in 1936. In the fiscal year 1936–37 imports from the United States increased 63·3 per cent., but exports rose only 7 per cent. El Salvador has 376m. of railway. Coffee comprises 70–80 per cent. of the exports. The monetary unit is the colon (value *1s. 7d.* approximately). The 1936–37 budget was balanced at approximately 22 million colones. The public debt in 1936 was 42,269,000 colones, a reduction of over 3 millions. In 1935, there were 1,200 primary and 30 secondary schools, with total enrolment of 82,468, and one university. Approximately 10 per cent. of the budget goes to education.

SALVATION ARMY, THE. Claiming the world as its 'parish', the Army now has centres and outposts in 95 countries and colonies and comprises 17,567 corps, for the staffing of which there are 26,877 officers and cadets, 116,048 local officers, 51,329 bandsmen, 82,100 songsters, 35,770 corps cadets, and nearly 10,000 persons without rank, wholly employed. It would not be possible to calculate the numbers who follow the banners.

During 1937 the leader of the Army, General Evangeline Booth (*b.* 1865), daughter of the first General, William Booth, visited India, where she took the Indian name 'Prema' (meaning love and affection), Ceylon, and the Netherlands Indies. She was present at the Coronation ceremony at Westminster Abbey, and among the guests at a reception at Buckingham Palace. For the observance of the 25th anniversary of the death of the founder, the General entertained 1,500 children and 500 mothers from the poorest parts of London, and shortly afterwards began a series of Congress campaigns in the United States and Canada, returning to England towards the end of 1937.

In April, Commissioner John McMillan, formerly territorial commander for Canada, was appointed chief of staff, whilst Commissioner Arthur R. Blowers has become international secretary for all overseas work.

Operations have been begun at Brazzaville, capital of French Equatorial Africa; and the first corps in the Philippine Islands has been established at Manila. Both the King and Queen of Denmark attended the Thanksgiving held in Copenhagen to celebrate the 50th anniversary of the start of the Army's activities in Denmark; and in connexion with a similar event in Holland, the Queen of the Netherlands contributed an article to the Dutch Army Jubilee Book.

In England, the plight of Spanish refugees brought some hundreds of Basque children under the care of the Army; whilst a new isolation block at the Mothers' Hospital, Clapton, London, was opened by Lady Baldwin. In November Queen Mary received Mrs. Commissioner Lamb, and congratulated her upon completing 55 years of officership. A London innovation has been for Salvationists specially to learn the language of signs, so that meetings may be arranged for the deaf and dumb.

In round figures, the self-denial effort in British territories produced in 1937 £156,000.

SAMOA comprises American Samoa and the Mandated Territory of Western Samoa.

American Samoa, lying between 167° W. and 171° W. long., and between 5° S. and 7° S. lat., comprises the island of Tutuila (40 sq.m.) and five other islands (total, 16 sq.m.). Population (1937), 11,908. Seat of government, Pago Pago (Tutuila), a magnificent harbour, being a regular port of call for trans-Pacific mail ships, and a U.S. naval station.

The Mandated Territory, formerly a German possession, lies between 171° W. and 173° W. long. and between 6° S. and 7° S. lat. It comprises the islands of Savaii (703sq.m.) and of Upolu, with its small adjacent islands (430sq.m.). Population (1936): 610 Europeans, 2,453 half-castes, 502 Chinese, 51,131 Samoans, and 82 other islanders. The mandate is held by New Zealand, the acting administrator being A. C. Turnbull. Capital, Apia (Upolu). Revenue (1935–36), £111,867; expenditure, £100,736. Exports (1936), £263,255, chiefly copra, bananas, and cacao: imports, £167,020.

SAMUEL, HAROLD, British pianist and composer; born in London, May 23, 1879; died Jan. 15, 1937. He studied music in Vienna and, later, at the Royal College of Music, London, of which he subsequently became a Fellow. As an interpreter of Bach, he was widely famed throughout England and in New York, as well as on the European continent and in the Dominions.

SAN FRANCISCO, California, central port and financial centre of the Pacific coast of the United States, known as 'The City by the Golden Gate'; area, 42sq.m.; population (est.) Jan. 1, 1938, 739,746.

History.—The early part of 1937 witnessed the conclusion of a 98-day strike of maritime workers that entailed actual monetary loss in excess of $200 millions and ranging upward to twice that sum in commercial intangibles. The lesson prompted a group of 43 business men to seek, by amicable discussion, prevention of future strikes. As 1938 arrived, they had laid the groundwork, although still in nebulous form, in conjunction with labour representatives. In the meantime, the San Francisco Industrial Association aided in effecting peaceful settlement of four-fifths of the threatened strikes, and the city finished the year with a record of 36 actual work stoppages and consummation of 137 collective bargaining agreements.

Education.—There are 72 elementary and 21 high schools in the public system, and numerous parochial educational institutions, as well as the University of San Francisco.

During 1937, the last barrier to the city's peninsular isolation was eliminated with completion and opening of the Golden Gate bridge, complementing the San Francisco-Oakland bay bridge, completed the year before. Increase in traffic, because of the bridges, intensified an already serious traffic control problem, not yet settled.

SANITARY ENGINEERING: *see* PUBLIC HEALTH ENGINEERING.

SAN MARINO, a tiny republic of 38sq.m. in the Apennines, S.W. of Rimini, entirely surrounded by Italian territory, ruled by a Grand Council and two Regents appointed therefrom to exercise executive powers. Population (1932), 13,950; the capital (of the same name) has about 1,700 inhabitants. Building stone and wine are exported: there is an electric railway to Rimini. Italian currency is in use, but there is a local silver coinage. San Marino attained some fame in 1937 by being one of the first States to recognize the Italian annexation of Abyssinia.

SANTO DOMINGO: *see* DOMINICAN REPUBLIC.

SÃO TOMÉ : *see* PORTUGUESE GUINEA.

'SAPPER' : *see* McNEILE, C.

SARAWAK, coastal strip on the north-west coast of Borneo (*q.v.*), an independent state, protected by Great Britain, ruled by Rajah Sir Charles Vyner Brooke (succeeded 1917). Area, *c.* 50,000sq.m. ; population (est.) 450,000, of mixed races, Malay, Dyak, etc., largely Mohammedans. Some educational activities are carried on by mission schools. The capital is Kuching (pop. 25,000). Sago, rubber, and rice are grown ; and coal and oil are worked in considerable quantities. There are numerous wireless stations, and regular steamer communication with Singapore ; roads have been constructed in the Kuching neighbourhood. Revenue in 1936 was about £641,000 and expenditure £514,000, the former being raised mainly from customs, oil and timber royalties, lands, and an opium monopoly. The exports and imports for the same year were valued at £2,865,000 and £2,131,000 respectively. A police force of about 900 is under British officers.

SASKATCHEWAN, the middle of three prairie Provinces of Canada, was created a Province, Sept. 1, 1905. It has a total area of 251,700sq.m. ; population, 931,000 (1936 est.). The present Liberal Government (William J. Patterson, premier) holds 50 out of the 55 seats. The opposition party is Farmer-Labour.

Widespread drought extending from the south border to north of Saskatoon characterized the year. The total farm value of field crops for 1937 was estimated at $47,404,000 by the Dominion Department of Agriculture, as compared with $148,233,400 in 1936. There is practically no other source of income. As a result, not less than 400,000 persons are on direct relief. The Dominion government has come to the assistance of the Provincial government, in some areas bearing the total cost of relief, in others a part. Lack of fodder for livestock has necessitated the shipping out of cattle and horses. Only sufficient livestock may be retained for family maintenance. The Dominion government has enlarged its programme under the Prairie Farm Rehabilitation Act in an attempt to prevent the recurrence of drought over such wide areas. (J. T. C.)

SAUDI ARABIA : *see* ARABIA.

SAVAGE, Rt. Hon. MICHAEL JOSEPH (1872–), New Zealand statesman ; son of Richard Savage, farmer at Benalla, Australia, where he was born on March 7, 1872, and educated at the State school there. Beginning life as an employee in a general store, he worked from 1893 on an irrigation scheme in New South Wales, and from 1900 as a miner in Victoria, afterwards becoming manager of the Rutherglen Co-operative Company. He arrived in New Zealand in 1907, started work in a flax mill, and soon became active in the Labour movement. After twice standing at parliamentary elections, he was returned for Auckland West in 1919, retaining that seat with increasing majorities in 1925, 1928, 1931, and 1935. He became national secretary of the N.Z. Labour Party, its deputy leader (1922), and its leader (1933). On Dec. 5, 1935, after the General Election, he was appointed first Labour prime minister of the Dominion, holding also the portfolios of external and native affairs, with charge of some minor departments. In 1936 he was made a privy councillor. In 1937 Mr. Savage visited London to represent the Dominion at the coronation, and in the same capacity attended the Imperial Conference (May 14–June 15), at which he strongly supported the Empire's close adhesion to the principles of the League of Nations. He was presented with the freedom of the City of London on June 14.

SAVINGS BANKS. In Great Britain the savings banks, under which term are comprised the Post Office Savings Bank, the Trustee Savings Banks, and the much smaller voluntary savings banks of the four great railway companies, to the exclusion of such other aids to the small investor as the Friendly, Building, and Co-operative Societies, Industrial Assurance, etc., are linked up with the National Savings Movement, which originated in 1916 as the National War Savings Movement, and of which the king is patron.

The National Savings Committee (for England and Wales), the Scottish Savings Committee (for Scotland), and the Ulster Savings Committee (for Northern Ireland) issue through the Post Office and on Government security National Savings Certificates at 15*s*., or, in Northern Ireland, 16*s*., per unit, the 15*s*. units being redeemable at any time within 10 years at the original purchase price plus accrued interest, the 10-year maturity value being 20*s*., and the Ulster certificates at any time within 12 years, the 12-year maturity value being 23*s*. Between Feb. 1916 and the end of 1937, 1,312,692,773 Savings Certificates were sold, exclusive of conversion issues, and at the end of 1937 there were in England and Wales 38,677 National Savings Groups, in Scotland 3,083, affiliated to the National Savings Committee, the financial position of which at Dec. 31, 1937, was as follows :

Amount remaining to credit of investors :	
(*a*) Principal	£386·3 millions
(*b*) Est. accrued int. to end 1937 .	£129·2 millions
Total . . .	£515·5 millions
Certificates sold during 1937 . .	£32,093,599
For cash	£24,070,199
Amount repaid during 1937 (provisional estimate) . . .	£27,985,711

Better trade conditions during the year and the consequent growth of persons in employment brought about an all-round increase in Post Office Savings Bank as in other savings bank business, the number of accounts rising by some half a million to about 10,700,000, while the balance due to depositors on Nov. 30 reached the record figure of £469,442,000, an increase of £37,076,000, since Jan. 1. Withdrawals during the year totalled £103,388,000 as against £92,416,000 during the previous twelvemonth. The Trustee Savings Banks, which had throughout the country 648 offices in 1937, with 3,709,219 accounts (including those of stockholders), close their books on Nov. 20, and their returns at that date in 1937 were as follows :

Balances due to depositors :	
Ordinary Department . .	£131,344,000
Special Investment Department .	93,348,000
Government Stock Department .	37,058,000
	261,750,000
Total Surplus	9,705,000
Total Funds	£271,455,000

The combined balances of the voluntary savings banks of the Great Western, London Midland & Scottish, London & North Eastern, and the Southern Railway Companies amounted in 1937 to approximately £26 millions.

These figures show that the savings held in association with the National Savings Movement amounted at the end of 1937 to nearly £1,282,400,000, which is approximately

46 per cent. of the total savings of the small investor in the United Kingdom.

Europe.—On the Continent and especially in Scandinavia, 1937 marked a visible improvement in savings bank activities. Growth was recorded in Germany and in Italy and, with an interruption due to the absorption of a large government loan and adjustments following revaluation of the currency, also in France. Progress was made in tightening of savings bank regulation by public authorities and in fostering the special training of savings bank employees. In Denmark, a new savings bank law came into effect on July 18.

United States.—In general, 1937 witnessed a growth in the volume of savings bank deposits in the U.S.A. and the number of depositors during that portion of the year 1937 for which statistics are available. Assets of the 551 Mutual Savings Banks in the United States increased $128,700,000 to a total of $11,588 millions during the six months ending July 1, 1937. Deposits credited to 14,759,246 accounts reached a peak of $10,207 millions, and the combined surplus was $1,323 millions, or 13·5 per cent. of total deposits. Dividends averaged 2½ per cent. during the year, a slight decrease from the rates prevailing in 1936. As in Great Britain, the increase in the volume and number of savings accounts was stimulated by the general improvement in economic conditions.

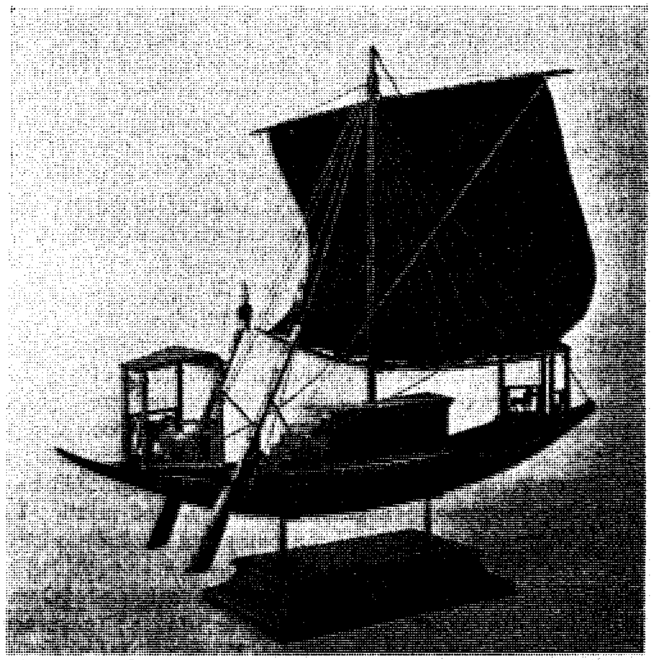
Mortgage loans, the customary major outlet for savings funds, were available only in small quantities, because of continued sluggishness in the building industry. Forclosures of mortgages abated and a general improvement was noted in the status of existing mortgage investments. Purchases of United States Government securities continued as the principal investment of current funds.

SCHACHT, DR. HJALMAR HORACE GREELEY (1877–), German economist, personal financial adviser to the Führer, president of the Reichsbank, and minister of economic affairs from July 1934 till Nov. 1937, when he voluntarily resigned (the first Nazi minister to do so), and was made a Reich minister without portfolio; born in Schleswig, he was educated in Germany, obtained his doctorate in Berlin, entered a banking house, and by 1916 was Director of the Darmstädter and National Bank. On the collapse of the mark (1923), he devised the 'Rentenmark', thereby stabilizing the currency, and in 1924 became president of the newly formed Reichsbank.

An opponent of autarchy, or self-sufficiency, Dr. Schacht, in April 1937, declared that Germany wished to buy cheaply abroad rather than manufacture expensively at home; in May at Paris, after opening the German Pavilion at the Exhibition, he asked that, in return for a firm guarantee of European peace, a return to a reformed League, and an open discussion on armaments, Germany should be allowed an outlet for colonial activity; but in August he ceased to take part in the work of his ministry, and on Nov. 26 resigned, as he did not entirely agree with General Göring's Four-Year Plan, though he was prepared to carry out Hitler's economic policy.

SCHUSCHNIGG, KURT VON (1897–), Austrian statesman, born at Riva in what was then 'Italia Irredenta'; served in the World War, and was made prisoner by the Italians in 1917. Educated for the law at Innsbruck University, Dr. von Schuschnigg entered politics in 1927, and in 1932 was minister successively of education and of justice under the Dollfuss régime, and founded the Sturmscharen, a militant organization of Catholic youth. From 1934, after Dollfuss's assassination, Schuschnigg was until March, 1938, chancellor of Austria, consolidating his position in 1936 by dispensing with his vice-chancellor, Prince Starhemberg. On Feb. 14, 1937, Dr. von Schuschnigg made a pronouncement to the Fatherland Front on the attitude of his Government to propaganda for the restoration of the monarchy. In March, he assumed the portfolio of public security, after dismissing Herr von Sturmer, the previous minister. On April 23, he met Mussolini at Venice to discuss political and economic co-operation between his country and Italy. On Oct. 8, in an important speech at Vienna, he summarized the policy of his régime, and appealed to Germany for the suppression of propaganda by Austrian émigrés. In the autumn Herr Schuschnigg issued a brochure, *Three Times Austria*, surveying his country's history since the fall of the monarchy.

SCIENCE MUSEUMS. At the Science Museum, London, an important temporary exhibition on television was held. The exhibition showed the development of television since the discovery of selenium in 1817 and the present state of progress. Early Baird apparatus was shown. A Cossor transmitter transmitted films to a demonstration gallery, where were receivers made by various manufacturers. Transmissions from Alexandra Palace were received and the first public demonstration of the Scophony big screen, 5ft. by 4ft., was made. Other temporary exhibitions were of electric illumination and timber. A marine screw-propulsion centenary exhibition showed pioneer experimental work, subsequent development, and present practice. The centenary of the London and Birmingham and Grand Trunk railways formed the occasion for a railway exhibition. The museum acquired a velocipede made by William Sawyer in about 1860 and a model 1913 Lee-Richards annular monoplane. Herr Gerhard Halle of Berlin supplied photographs and diagrams relating to motorless flight in Germany, 1890–96. The Royal Institution lent an induction coil producing a 42-in. spark, made for Spottiswood for his work on electrical discharges in vacuum tubes. Bryant and May gave their museum of lighting appliances on permanent loan. Other acquisitions were a Wollaston notebook on experiments on



Science Museums]

FROM A MODEL IN THE SCIENCE MUSEUM, SOUTH KENSINGTON. AN EGYPTIAN SHIP, C. 1300 B.C., ONE OF THE MUSEUM'S ACQUISITIONS IN 1937 the production of rhodium alloy and the earliest colour photographs, by Clerk Maxwell, 1859–62. Mr. Follet was appointed assistant keeper in the place of Dr. Plummer, who died in 1936. Mr. Clowes, assistant keeper specializing in nautical research, died in July 1937. Publications included M. J. B. Davy, *Interpretative History of Flight* (1937), and A. Barclay, *Pure Chemistry* (Part I, 1937).

The Home Office Industrial Museum, illustrating safety in industry, opened an extension, in which were displayed a textile plant, woodworking machines, machines for grinding and polishing, and protective devices for cellulose spraying and other industries. Lord Rothschild bequeathed his Tring museum to the nation on condition that the trustees of the British Museum should undertake the custody and maintenance.

United States.—The Buffalo Museum of Science opened a 16-week course in museum training. Mr. Philip Fox was elected director of the Museum of Science and Industry, Chicago. Professor Allen, of Cornell University, constructed two nature groups of birds which sing and go through natural life-like movements by means of sound films and electrically driven mechanisms. Mr. Frank Tose, in charge of the exhibits at the California Academy of Sciences, San Francisco, was selected to represent the Carnegie Corporation of New York in a trip to Australia and New Zealand to introduce the latest methods of preparation of natural history habitat groups in public museums.

British Empire.—The Albany Museum at Grahamstown, South Africa, built a new wing of two rooms, to contain marine collections, history, and prehistory sections. Mr. Matthews retired from the Australian Museum, and Mr. McCarthy, assistant in anthropology, visited the Netherlands Indies and Malay States, to study prehistory and to take part in excavations at the island of Celebes, under Professor van Steen Callenfels. The director of the commercial and industrial museum of Montreal, Dr. Henry Laureys, published a booklet on the museum collections, including the recently established permanent exhibition of British Empire products.

Europe.—The Brussels Museum acquired unique specimens of the Wealden dinosaur Iguanodon and installed them in two airtight cases. The bones were specially treated and mounted on iron frames. The Moscow Palaeontological Museum was moved to Moscow from Leningrad and opened for the International Geological Congress in July 1937. A museum recently founded at Lennep, Prussia, the birthplace of Wilhelm Conrad Röntgen, illustrates the significance of X-rays and the development of Röntgen technique. The German Röntgen Society founded a Röntgen Institute at Munich, containing a museum and library. The German Museum at Munich opened a new public hall and library. The library is on three floors—the first containing rooms for reading and working, the second a large newsroom and collections of gramophone records and plans, while the third forms part of the book stack. The museum of the Conservatoire National des Arts et Métiers, Paris, acquired a model of the engine Pacific Compound 1922–33; a graphorama, invented in 1892 by M. le Baron; a Caruelle piston pump; a Daubron centrifuge pump, and a bicycle of 1886. (V. R.)

SCOTLAND, northern portion of the mainland of Great Britain, with many adjacent smaller islands; governed as an integral part of the United Kingdom, being represented in the British Parliament by 16 representative peers and 74 members in the Commons. Capital, Edinburgh.

Area and Population.—Area: 30,406sq.m. Population: (census 1931) 4,842,554; (estimated 1936) 4,966,000 (density, 159 per sq. m.).

Religion.—The (Presbyterian) Established Church of Scotland, with 1,288,500 communicants, is that of the majority. There are some 610,000 Roman Catholics, and about 127,000 members of the (Protestant) Episcopal Church.

Language.—English, save for 0·15 per cent. of the population (census 1931) who speak Gaelic only; 2·69 per cent. speak both languages.

Educational System.—*See* GREAT BRITAIN. There are four universities, at St. Andrews, Edinburgh, Aberdeen, and Glasgow, with about 650 full-time professors, lecturers, etc., and 13,700 students.

Leading Cities.—The largest (and fourth largest in the British Empire) is Glasgow, population (1931) 1,088,524, followed by Edinburgh (438,998), Dundee (175,583), and Aberdeen (167,259).

History in 1937.—King George VI held court at Holyroodhouse, Edinburgh, in July. In October a committee (chairman, Sir John Gilmour) reported recommending a reorganization of the executive administration into four co-equal departments of health, education, agriculture, and home affairs, to operate as far as possible from Edinburgh, under the Secretary of State. Two by-elections in Glasgow (at Hillhead and Springburn) left party representation unchanged, being won by a Conservative and a Labour supporter respectively, and the death in November of Mr. Ramsay MacDonald (*q.v.*) created a vacancy in the Scottish Universities division which, at the end of the year, had not been filled. A committee on the Scottish Marriage Laws under Lord Morison reported in January, recommending the abolition of all irregular (' Gretna Green ') marriages and the introduction of a new and simplified form of civil marriage. In April the Duke of Gloucester laid the first stone of new government buildings at Calton Hill, Edinburgh. Elaborate preparations were pushed forward for the Empire Exhibition to be held in Bellahouston Park, Glasgow, in 1938.

SCOTLAND YARD: *see* POLICE.

SCOTTSBORO CASE, THE, in which nine Alabama negroes were originally sentenced to death on charges of rape, entered its sixth year in the courts in 1937. The year's chronology of formal events began on May 27, when the local defence attorney, Clarence L. Watts, petitioned the State Supreme Court to set aside Heywood Patterson's 75-year sentence and order a new trial. On June 14, this petition was denied. A further petition was later made to the Supreme Court of the United States; but it too, on Oct. 26, was denied—Justice Black taking no part in the decision. Meanwhile, the new trials previously ordered for the remaining eight men began on July 12 with Clarence Norris, who four days later was again sentenced to the electric chair. Execution of this sentence, subsequently set for Sept. 24, was automatically stayed by the filing of notice of appeal. The State dropped the death plea against Andy Wright, and on July 21 he was accordingly convicted and sentenced to 99 years in prison. Charlie Weems, next in order, received a sentence of 75 years. Then on July 25, the attorney-general *nolle prosequi*'d the main indictments against the remaining five (Eugene Williams, Roy Wright, Olen Montgomery, Willie Robeson, and Ozie Powell). But Powell pleaded guilty to a secondary charge of assault on a deputy sheriff, and was sentenced to 20 years in prison. Motions for new trials for Norris, Wright, and Weems were denied on Aug. 28 by the trial judge.

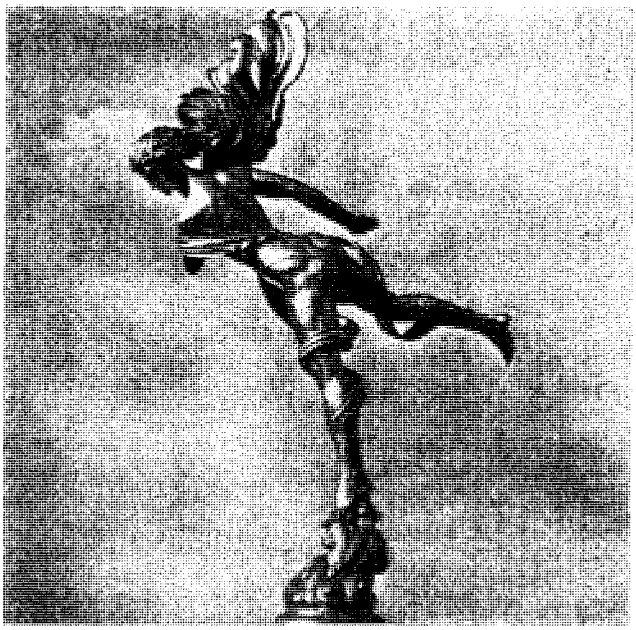
SCULPTURE. Sculpture, the art of making things in three dimensions by means of carving or modelling, is at the present time divided into three main channels. There is what is called trade sculpture, *i.e.* the business of supplying carved or modelled work to the designs or under the directions of architects. This kind of work is generally of little interest or significance, except as showing the movements of fashion in architects' offices, and of taste among the men of business for whom such works are done. Secondly, there is the work of the modellers—from that of the accepted academicians, like Sir William Reid Dick, to that of the expressionists and self-expressionists, like Mr. Jacob Epstein. These works may be divided into two kinds: (1) those done for, or bought by, individual customers, whether portraits or fancy figures, and (2) those commissioned for public use, whether to stand alone (as statues in public places), or, after they have been translated into stone or marble or bronze by craftsmen hired for the purpose, to go on buildings. Thirdly, there are the works of independent carvers (so called to distinguish them from the 'trade' carvers); and these again may be divided into two kinds: (1) those done in the studio, whether for the artist's own pleasure or for a customer's private use, and (2) those done either in part or wholly on buildings. These last differ from the works of the trade sculptors in that, though they may be, and generally are, commissioned by architects, they are done to the design of the carver himself.

Whether or no the works of this last-named category are worthy of admiration, or bear comparison with similar works of the past, it is noteworthy that the revival of carving done in this way is a development of very recent growth and is a notable thing in itself. It is only a few years since students in art schools were actually forbidden to carve stone. Such work was thought to be only fit for a rather low class of hired servant, and the scorn thrown by Leonardo da Vinci on the job of the stone and marble carver seems to have set a fashion of opinion which lasted for nearly 500 years. No other recent development in the business of sculpture is of such outstanding importance.

In the art of bronze founding, owing to the increased value attached to the personality of the artist himself, an increase naturally resulting from the widening divorce between the masses of machine workers and the special people called artists, there has been considerable development in the vogue for exact reproduction of the very thumbmarks of the modeller, and the exactitude now obtainable has enabled the artist to reach much more poignant heights of self-expression than were thought desirable in the past.

Of these two developments, the latter is the more natural one in an industrialized world. There is necessarily no compatibility between the more or less machine-made walls and structures of buildings, with their machine-made fittings and furnishings, and the hand-made and often excessively idiosyncratic carvings of individual carvers, who by reason of their genteel upbringing and art-school training, are generally an entirely different kind of workman from the engineers and building operatives. There is therefore a strongly marked tendency among those architects who are in touch with the actual conditions of industrial building to eschew sculptured ornament altogether.

On the other hand, given the conditions of our world, the insistence upon self-expression is natural. The product of the machine being, of its nature, impersonal, and the use of things being human, a premium is placed on personality wherever it can be found. One exaggeration leads to another, and a photograph of a sweetheart is the natural decoration for a dug-out. The art of sculpture, therefore, divorced from its public service and lacking the discipline which public service entails, tends to become more and more merely a means to the expression and exhibition of the private fancies and psychological idiosyncrasies of the artist, in this respect going the same way as the arts of painting, music, and poetry. Moreover, in the absence of public use, and therefore of subject-matter generally appreciated, the artist is thrown back on aesthetic experiments. Such things have but a small market; and so, as sculpture is disappearing from our buildings, it is forced to proceed down a blind alley, at the end of which is a hothouse. (E. Gi.)



Humphrey and Vera Joel]

THE FIGURE OF 'ARIEL' BY CHARLES WHEELER, ON THE NEW BANK OF ENGLAND BUILDING

SECONDARY EDUCATION. The function and purpose of secondary education in Great Britain as distinct from primary education has never been very clearly defined. It may be said that the primary school is concerned with training children in the fundamental skills, and in giving them a certain expertness in the three 'R's—reading, writing, and arithmetic. Progressive primary schools have enlarged their curriculum beyond these simple fundamentals, but the core of the curriculum is the training in these skills. On the other hand, in the secondary school, these skills are taken for granted, and are utilized in a further widening of the curriculum by the inclusion of languages and science. The main case for the introduction of certain subjects in the curriculum is that they have intellectual value in the training of the mind. However, claims are being pressed that this should not be the sole function of the secondary school, but that more attention should be given to vocational training, *i.e.* that the schools should give some instruction in the more complex skills which form the basis of industry and commerce. It is stated that the secondary school curriculum has become too liberal, too unreal, and too far removed from the workaday life which the secondary school pupil has to face in the future. At the same time, the secondary schools are being constantly urged to introduce new subjects, to give more time to physical training, to introduce more practical work, to cut down the homework—all of which means that the pressure on the timetable is becoming very serious. How is this to be met?

Some think that the only remedy is to cut out a number of subjects so that the remaining subjects may be done thoroughly well. Thus the curriculum would lose the liberal flavour, and children would be able to study only the narrow range of subjects which the school provides.

Variety of Type.—Another suggestion is that there should be separate kinds of schools, some academic and others with a strong bias towards the vocational. Another solution is the creation of big multiple-bias schools with a number of alternative courses. A further and not very popular proposal suggests the collection of all the post-certificate pupils in the secondary schools of an area in one super-secondary school or High School, thus leaving the ordinary secondary school with a reduced curriculum for pupils from 11 to 16 years of age only.

There is a serious objection to the creation of types of secondary schools. The training provided by the school is not purely a matter of subjects. It is in the secondary school that the pupil gets training in community problems, and therefore it seems absolutely desirable that the school should be a cross-section of the community.

To put all handworkers in one school, all potential clerical workers in another school, and all the academically inclined in a third school, would mean that these classes of the community would become estranged quite early in life; and it is felt that the secondary school should be a welding weapon rather than a disintegrating force. A good system of secondary education should help to allay suspicion and smooth the conflicting interests which are too easily exhibited in the life of the community.

A happier solution, therefore, would seem to be the multiple-bias school, where the problem of differing abilities is met by varying courses and yet the children are all brought up in the same communal atmosphere. They all learn the many intangible things which a good school teaches. The difficulty about this solution is that it presumes a big secondary school population, and thus, whereas it is a quite easy proposition for a big city, it is more difficult for country areas where the schools are smaller.

Control of the Schools.—Existing secondary schools range from the maintained schools provided by the local authority, through the aided schools, to the independent and public schools. The distinction is largely one of finance and control. Some schools are controlled locally under the general oversight of the Board of Education; other schools—mainly the old endowed schools—have independent governing bodies, the work of which is again lightly controlled by the Board of Education; whilst other schools—generally boarding schools—are quite independent of public control. All these schools are co-partners in the great task of secondary education.

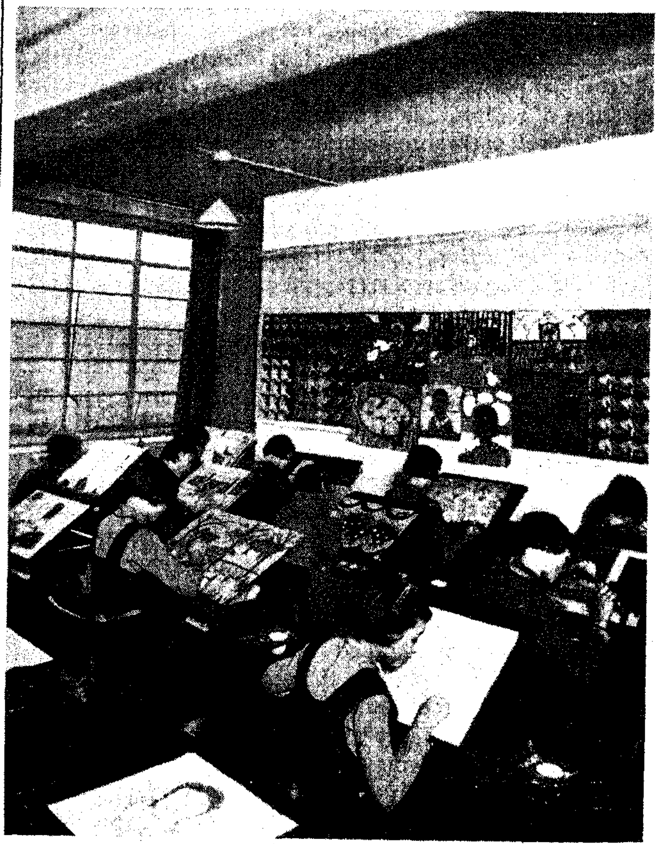
There are some who would like all schools controlled by the State or local authority, but there is a grave danger that this would kill the peculiar characteristic of schools which have developed their own personality and tradition. There seems no good reason for breaking up the harmony on this educational front. It is typically British, and offers facilities to all classes of the population. The best type of public school realizes the great part played by the maintained schools, while the latter for their part recognize the great strength which the freedom of the independent school brings to secondary education. There are many who think that the influence and prestige of the maintained schools would be improved if they were given greater freedom, with governing bodies less subject to external control.

A Cross-section of the Community.—Most of the maintained schools take a high proportion of special place scholars, *i.e.* the entry is competitive and the fee depends on a means test applied to the parents. There are some who, on the grounds of social equality, would like to see 100 per cent. special places in these schools. There are reasons for thinking that this would defeat its own ends. It would mean that the schools would cease to be a cross-section of society, and the function of the school in welding into one community boys from different types of homes would cease. An incidental effect would be the re-emergence and enlargement of private schools and a great development of class division.

Recent Advances.—There are one or two recent advances towards freedom which should be recorded. Modifications of the School Certificate Examination are being made which will largely free the schools from the incubus of matriculation. This is a great step forward. It enables the school to adjust the curriculum according to the interest and ability of the pupils rather than force them through the five-line groove which has been considered essential for the prospective undergraduate.

Again, sixth form work has been controlled by means of advanced courses, and grants were paid for such courses as satisfied the Board of Education. The restriction of courses and subjects has been removed, and schools may now arrange a perfectly free sixth form curriculum. Their freedom is limited still, however, by the requirements of University Scholarship Examinations.

One of the outstanding developments in the secondary school has been the growth of careers work. Many schools now not only advise pupils about future careers, but actually help with the placement work. The attention of the child is directed to his future career by means of lectures



London County Council]

ART IN THE SENIOR SCHOOL

and visits to works. This, with the freedom of the curriculum from examination restraints, will help to divert some of the pupils from the black-coated professions which have tended to absorb the main output of the secondary school in the past to the detriment of commerce and industry and the more practical vocations.

Other changes can be summarized briefly. Physical training is receiving more and more recognition in the schools, and the cinematograph and broadcasting are being tested to see what contribution they can make towards the educative processes. There has also been a general lightening of home-work, in the hope that more time will be given to leisure pursuits and hobbies. Lastly, secondary teachers themselves are taking a greater interest in professional training. Attempts are being made to evolve a system which will not only prepare teachers for secondary schools, but keep them in touch with the University Training Departments for the first years of their teaching life. (T. T.)

SEEING EYE, the corporate society that educates dogs to be the trusted guides and friends of blind men and women, has had in 1937 the most successful year since its inception in 1928, when Mr. Morris Frank brought his Alsatian, 'Buddy', from Mrs. Harrison Eustis's kennels in Switzerland. Bred for 'character', and trained by Mrs. Eustis and Mr. Elliott S. Humphrey, the geneticist, 'Buddy' is the dog that proved Seeing-Eye dogs could safely guide blind people through heavy American street traffic; and it is primarily due to her that in 1937 100 dogs graduated from the Seeing Eye at Morristown, N.J., and led their 100 blind owners from darkness and dependence into light and liberty.

Seeing-Eye dogs are now working in 40 of the 48 United States. Sixteen of them are 'attending college' as pilots to student masters; others are engaged as guides in such diversified occupations as the law, the ministry, journalism, politics, music, and a great variety of mercantile pursuits, including the raising of poultry. In addition to the actual dogs produced in 1937 for those blind persons capable of benefiting from a dog—for unhappily all blind men and women cannot be permitted to hope for this liberation—the Seeing Eye has made notable progress in informing a sympathetic public, not only of the Seeing Eye's need for financial support (each dog costs approximately £180, of which the blind purchaser is asked to pay only £30), but also of the truth about blindness.

An ancient and truly blind tradition has encouraged the pitying notion that blind people are not normal individuals but a helpless group of the afflicted. In breaking down this hampering attitude of mind the Seeing Eye graduates themselves—both the human and canine ones—are the chief missionaries. They are everywhere proving that a blind person with a Seeing-Eye dog is not merely an amazing prodigy, but is an ordinary member of society, somebody who is 'like anybody else'.

In 1930, a Guide Dog Committee was formed in England, and a training centre for dogs was set up at Wallasey, Cheshire. The cost of a trained dog to a blind owner is about £60; but, thanks to the charitable response of the public, many blind persons are able to obtain dogs for a very much smaller sum. (B. Ta.)

SEISMOLOGY continued to advance during 1937, though there have been no great earthquakes to spur interest—none, indeed, worthy of listing. Co-ordinated effort in many lands has made effective progress possible. The trend of development has been toward more complete information rather than toward spectacular discoveries. From the viewpoint of investigation of the earth's interior and crust, studies have included: improvement of tables of travel time of earthquake waves; discovery and listing of new phases; variation of travel time with direction of travel of the waves; and deep-focus earthquakes. Through seismic methods using explosions as source of waves, conditions beneath the sea have been studied and possibility of extension to great ocean depths has been indicated.

Strong earthquake motions have been measured and analysed, the results tested for accuracy, and application has been made to structural design. In regions of great structures, such as dams and bridges, special provision has been made for locating earthquakes and recording their destructive motions. In this connexion, natural vibration periods of structures and of the ground have been measured. Little progress has been made in determining ultimate earthquake cause, but light has been thrown on conditions within the crust by laboratory tests of crustal materials under high temperature and pressure. Though general earthquake prediction is regarded as impossible, attention has been given to the possibility of determining whether stress is growing in the crust which may lead to earthquake, by means of triangulation, levelling, tilt measurement, and special measurements along great fault planes. In Japan, an effort has been made to relate chronic or long-continued slow tilt with acute tilt which occurs before earthquakes.

Information regarding earthquakes has been made more complete through additional instruments and through better systems of securing reports from individual observers. Conditions are still unsatisfactory, however, for much of the earth. Immediate location of important earthquakes has stimulated interest. The strongest attack on the problems have been made in Japan and the United States, covering both the scientific and practical sides of the subject. In Europe, special attention is given to scientific problems, though some work on practical applications is being done in Germany and Italy. Under international auspices, the preliminary list of earthquakes for the earth as a whole is published in France and the final list in Great Britain. An excellent bibliography is prepared by Canada.

SEMPLE, Lieut.-Col. SIR DAVID, British bacteriologist; born April 6, 1856; died Jan. 7, 1937. After graduating in medicine at the Royal University of Ireland, he entered the R.A.M.C. in 1883; and in 1900 founded the Pasteur Institute of India at Kasauli. After his retirement in 1905, he entered the service of the Government of India, in order to organize the Central Research Institute at Kasauli. He was knighted in 1911. In 1894 he married Ethel May Watson, and he had three daughters.

SENEGAL: *see* French West Africa and the Sahara.

SERBIA: *see* Yugoslavia.

SERUM THERAPY: *see* Immunization, Therapeutic.

SEYCHELLES. A British crown colony in the Indian Ocean, consisting of 92 islands between 4° and 10° S. lat., and 46° and 57° E. long. The governor and commander-in-chief is Sir A. F. Grimble, K.C.M.G.; and the capital is Victoria, in Mahé. The aggregate area is *c.* 156sq.m., of which Mahé accounts for 55sq.m.; and the total population is 29,803 (Mahé 25,367). Education is in the hands of Roman Catholic and Church of England missions. An annual scholarship is awarded for study in England. There are no railways or telephones. There is a mail steamer once a week, and air mails arrive via Karachi and Nairobi. The principal products, with 1935 production figures, are coconuts (47,000 tons) and copra (4,311½ tons); 57,130 kilos of cinnamon, valued at Rs.189,929, were also produced. Exports for 1935 amounted to Rs.996,169, and imports to Rs.891,35. The currency is the Indian silver rupee. There is an income tax and a rural house tax. Revenue and expenditure for 1935 were Rs. 728,173 and Rs.675,058 respectively.

SHANGHAI: *see* SINO-JAPANESE WAR.

SHANNON, CHARLES HAZELWOOD, R.A., British artist; born at Sleaford, Lincs., April 26, 1863; died at Kew, March 18, 1937. For an account of his life and work, *see Ency. Brit.*, vol. 20, p. 459. The last years of his life, especially since the death in 1931 of his friend Charles Ricketts, were to a great extent spent in retirement.

SHEPPARD, THE VERY REV. HUGH RICHARD LAWRIE, C.H., D.D., British clergyman and pacifist; born 1880; died in London, Oct. 31, 1937. He was educated at Marlborough and Trinity Hall, Cambridge. Ordained in 1907 to the chaplaincy of Oxford House, Bethnal Green, he was its head from 1909 to 1910. He was then successively extra private chaplain to the Archbishop of York, curate at St. George's, Hanover Square, and, from 1914 to 1927, vicar of St. Martin-in-the-Fields, Trafalgar Square, London. From 1929 to 1931 he was Dean of Canterbury, and in 1935 he was appointed Canon and Precentor of St. Paul's Cathedral, London. He had also been deputy priest-in-ordinary to King Edward VII and King George V, becoming priest-in-ordinary in 1915 and honorary chaplain to the King in 1916; and during the War had been a chaplain in France. Dr. Sheppard worked actively for the Life and Liberty Movement, of which he was an honorary secretary. His incumbency of St. Martin's was notable for his development of this central London church as a home of refuge for the destitute and unemployed, and also for the fact that the first service ever broadcast from a church was conducted by him in that church. As a prominent pacifist, Sheppard was responsible for the formation, in 1934, of the Peace Pledge Union; and in July 1936 he wrote a letter, which was not answered, to Herr Hitler, asking to be allowed to carry his pacifist campaign into Germany. On Oct. 23, 1937, he was elected Lord Rector of Glasgow University, having stood as the candidate of the Peace Pledge Union.

Russell, London]

THE LATE REV. 'DICK' SHEPPARD

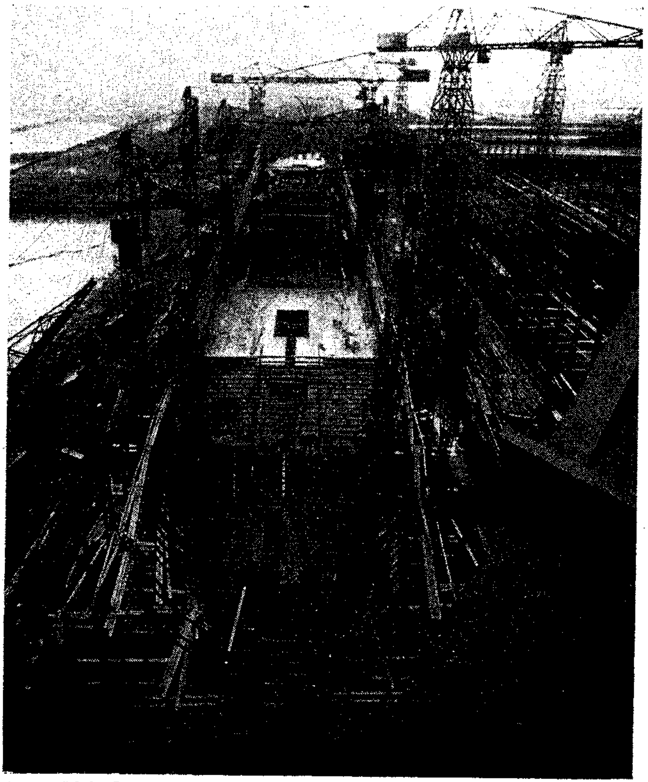
SHIPBUILDING. The year 1937 opened with high hopes for the shipbuilding industry, but ended in disappointment and anxiety in practically all countries. Although prices were beginning to rise at the end of 1936, there was, generally speaking, little anxiety, as there were plenty of new orders coming into the yards; but within a short time prices had risen to such an extent that few shipowners could order new tonnage with any prospect of financial return, and new orders were practically confined to naval work and ships which, for one reason or another, had to be built for the special purposes of their owners.

This tendency was the same in all countries where the shipbuilding industry was not controlled. In Britain the figures were very carefully examined, and it was shown that shipbuilding prices advanced by roughly 75 per cent., varying with the district and type of ship built, in nine months. Of this increase 70 per cent. was due to causes entirely beyond the control of the shipbuilders, and, ironically, one of the first increases was due to the increased freights that the owners were getting on imported steel plates.

The rise in prices naturally caused serious loss to builders who had taken contracts at the beginning of the revival at only a reasonable profit, to help cover work taken at a loss during the depression in order to keep the technical personnel together. In the case of the Orient liner *Orcades* (23,456 tons), which was ordered in 1935, the owners announced that she would have cost them £400,000 more had she been ordered at the end of 1937. With improved freights and the demand for immediate delivery, many ships which had been built at a loss were sold, sometimes before delivery, at a very high price, to the chagrin of the builders. It is unfortunate that the general level of shipbuilding prices is unlikely to fall for some time at least.

For a large part of the year the builders of most countries in the world were also handicapped by the shortage of steel, and this was made worse by the rearmament programmes, which demanded priority. Deliveries were delayed, in many cases, until the peak of freights had been passed.

Short as the revival was, it had far-reaching results. During the long slump a large number of economizing devices had been patented, both in the hull, to reduce the horse-power necessary, and in the machinery, to reduce the fuel consumption per horse-power. Many of these, whose patentees were not in a position to build or convert ships to demonstrate them, seemed likely to pass without recognition, but when shipbuilding was revived, it was fully realized that many costs were bound to rise, and must be balanced by fuel economy and greater efficiency. Ideas



Cunard White Star Ltd.]

AN OVERHEAD VIEW TAKEN FROM THE STERN OF THE CUNARD WHITE STAR'S NEW LINER 'MAURETANIA' NOW UNDER CONSTRUCTION.

were therefore given a practical test at sea, in competition with others, and the general standards were greatly improved.

Technical opinion is not unanimous as to the extent to which these improvements should be taken ; it is actually a matter of mathematical calculation to balance the probable earning powers of the ship during her normal life with the first cost, and the interest and depreciation which depend on it. Complicated construction and royalty fees may render her unprofitable, while all claims to improved economy are justified. Alongside many ships of the most ingenious design, there have therefore been built a number whose keynote is simplicity, although the general use of testing-tanks for all new ships has vastly improved hull forms. The difficult design of the popular motor coaster, with its shallow draught, has been strikingly improved by this means, particularly round the stern.

In the engine room the most striking feature of 1937 was the notable reaction in favour of steam as against the diesel engine. This has been most conspicuous in Japan and the Scandinavian countries, in which the diesel engine appeared to be adopted for all types, but where each case is now considered on its merits. The steam plant installed is nearly always one of the improved economy types, of which many have been patented, and the general tendency of all steam plant is towards higher pressure.

The advantages of higher pressure and more modern engines are well known in the acceleration of the Union-Castle steamers for the new Cape mail contract, which demands about 20 knots instead of 17. This was contrived so economically in space that it was possible to suppress one of the boiler-rooms necessary when the ships were built in 1921 and 1922, and to substitute oil-fuel tanks. In the later motor ships, entirely new diesel engines, two-stroke double-acting, of 50 per cent. greater power, had to be substituted, but it was possible to obtain the increased power without increasing the machinery space. The modernization of motor ships in similar fashion to satisfy the constant demand for higher speed is being carried out on a large scale in Italy and Germany, generally with an improvement of the bow lines by drawing out the hull forward.

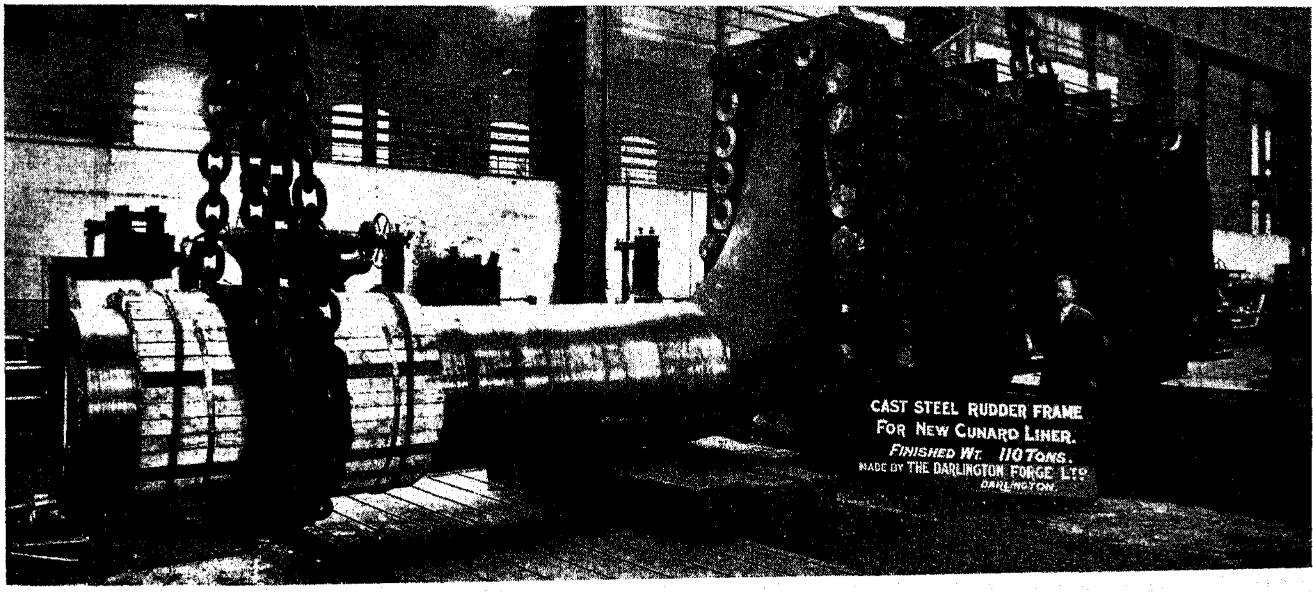
The substitution of welding for riveting has made great progress during the year to save weight. In most cases only certain parts of the ship, internally and on deck, are welded, but several ships have been built entirely by that process, and are being carefully watched on service.

One of the most interesting types for which all-welding has been tried is the spirit tanker, for the rapid corrosion of these ships always starts round the rivet-heads. This experiment is being tried principally in the United States, where steam is still favoured, while practically every modern tanker in Europe is diesel-driven. American owners have also carefully tested tankers with the Arcform hull against those of orthodox design, and have obtained approximately the same speed with 3,000s.h.p. against 3,500.

The maximum economical speed for tankers on ordinary commercial service is still in the neighbourhood of 13 knots, but the construction of a number of Japanese motor tankers, with State aid for naval purposes, with trial speeds of 19 and 20 knots has caused great interest, especially in the United States, where the Government is being urged to take similar steps.

The German shipbuilding industry has been working to capacity, under strict control, on the modernization of the German merchant service, and has obtained a large number of foreign orders through the currency regulations. The Italians are planning a colossal State-aided shipbuilding programme, aggregating 1 million tons gross. The first 250,000 tons is to be for the modernization of the liner fleets, the remainder for the creation of an up-to-date tramping fleet on what are understood to be novel designs. The Russian Government has had great difficulty in keeping to schedule with merchant shipbuilding in its national yards, but that is probably due to increased pressure of naval work, details of which have been kept very secret.

The most interesting ships started or completed during the year are the improved *Queen Mary* for the Cunard White Star Line, and the same company's new 'intermediate' steamer *Mauretania*, with a gross tonnage of about 35,000 and a speed of 22 knots. A very similar ship is being built for the United States Lines to replace the *Leviathan*. For the long voyage to Australia the Shaw



Iron and Steel Industry]

CAST-STEEL RUDDER FRAME FOR NEW CUNARD LINER, 'QUEEN ELIZABETH'

Savill Line is building the 27,000-ton *Dominion Monarch*, with a speed of 19½ knots, with four opposed-piston Diesels. The Belgian Government's cross-Channel packet *Prins Albert* is now the fastest merchant motor ship afloat.

(F. C. Bo.)

SHIPPING, MERCHANT MARINE. The year 1937 was a year of great importance to shipping all over the world, and of not a little difficulty. The latter part of 1936 showed promise of better times after the longest slump in history, lasting with practically no break since 1921 and in intensified form since 1929; and the first nine months of 1937 more than fulfilled the promise. It was generally realized, however, that only a proportion of the progress was due to a permanent improvement in genuine international trade, the greater part being owing to an unusual grain movement due to crop failures, the rearmament policy of the various Powers demanding raw materials, and warlike operations in Spain and the Far East.

The improvement was most conspicuous on the tramping side—ships chartered to take full cargoes by single interests as opposed to the liners running to regular schedule with the goods of numerous shippers; and the rates of freight were helped by the withdrawal of so many Spanish and Japanese tramps from the market. The index figure prepared monthly by the Chamber of Shipping of the United Kingdom may be taken as giving a very fair indication of the tramping business all over the world. Taking the average of 1929 as 100, the figure in January was 131 and the peak in September 172·2 (less than 43 per cent. of the 1920 rates), after which it declined sharply. As the British Tramp Subsidy Law of 1935 was based entirely on the 1929 level of freights, the owners received no help from the State.

The greater demand for tramps showed the advantage of the more up-to-date ships built with improved hull forms and machinery (*see* SHIPBUILDING), whose speed was generally better than the older types, especially in bad weather, and which were therefore enabled to make more voyages, while they were more economical in manning, fuel, insurance premiums, port dues, and many other directions. The general increase in practically every expense paid by the shipowner, more under some flags than others but considerable everywhere, prevented most tramps showing the profit suggested by the better freights.

Although there were, only a few years ago, a large number of seamen of all grades unemployed, the continuance of the slump with so many ships laid up naturally having caused many of these men to seek work ashore, when the ships were recommissioned there was, in most countries, a serious shortage of trained seamen of good reputation. In order to tempt lads of the right type to become seamen—and to remain at sea when they were trained—it has been necessary for the owners to make great concessions in pay, hours of work, victualling, conditions, and accommodation, which have added greatly to the expense of running ships. In the British merchant service a contributory pension scheme has been established for all officers, the owners raising pay sufficiently to cover the officers' contributions, and social legislation or regulation has been framed in most European countries to make sea life more attractive.

Throughout Europe the greatest shortage has been in qualified marine engineers. This has been caused partly by naval demand on terms which are generally tempting, partly by better chances of employment ashore, especially in munition works and public utility undertakings, and partly by the shortage of recruits through the idleness of the shipyards and engineering works, in which the marine engineer usually serves his apprenticeship, during the depression.

These difficulties and increased running expenses of the shipping industry have helped to bring about a spirit of co-operation in a business in which co-operation has generally been regarded as impossible and cut-throat competition the recognized condition, even within each national flag. When the British Government introduced the tramp subsidy, it was made a condition that the owners benefiting should co-operate as much as possible. Not only was this done, but when the subsidy was discontinued and there was no question of compulsion, British tramp owners decided to continue voluntarily. More than that, owners of cargo liners agreed to work with the tramp interests, and at the end of the year a large proportion of the tramp ship-owners on the continent of Europe came into the scheme. The minimum freights thus established make practically no difference to the retail prices of commodities, particularly foodstuffs, but they make all the difference to the shipowner.

Generally speaking, the cargo liner companies did not benefit by the better freights nearly as much as the tramps. Their published rates are in most cases regulated by conferences among themselves and also by long-term agreements with their clients, so that when the rising expenses that they shared with the tramp owners forced them to increase their rates, it was by very slow degrees, for which many firms were blamed by their shareholders. Experience in the latter part of the year proved their policy to be a wise one; when commodity prices became uncertain, the consignees were not so willing to incur the risk of importing full cargoes, and had the parcels rates of the liners been less reasonable, they would probably not have ordered at all. A number of the older and slower ships built as cargo liners were relegated to the tramping trade when they could not satisfy the merchants' demand for speedy delivery, and many of the new, fast ships designed as tramps were taken up on time charter by the liner companies.

The Spanish and Japanese campaigns had a big influence on shipping business, and not only by their withdrawal of tonnage from the market. The Japanese had time-chartered a number of ships, mostly Scandinavian, during the period of preparation, and the question of war risk to these ships soon assumed an acute form. In the Spanish trade, also, this aspect became very important, although both sides were willing to pay almost any price for shipping facilities. The considerable use of air attack on shipping, often well outside territorial limits and frequently directed, on account of the difficulties of identification, against ships which had nothing to do with the war, proved that post-war international agreements for the safety of the crews of merchant ships attacked are quite useless in war-time, although, on the other hand, air attack on unprotected merchantmen has proved surprisingly futile. The few ships that have been destroyed have all been of very small tonnage; when bigger ships were attacked, even in favourable circumstances, direct hits proved very difficult to score, and when they were registered, the damage done was very much less than had been anticipated.

The utilization of shipping in the war areas has again brought up the old sore point of national registration: on the one hand, there is strong feeling in some countries against the national flag being used for the protection of ships which are really foreign in every respect except formal registration, and in other countries there is anxiety concerning the transfer of ships, badly needed for national purposes, to foreign flags in order to take full advantage of war prices. Some of the minor Powers, on the other hand, have encouraged these transfers to obtain the benefit of the situation.

Owing to the profits to be made by any efficient ship, the scrapping market has been restricted to those ships which would cost too much to put into running order or those whose type prevented their being run at a profit. The maximum economical price was soon reached, but at that the shipbreakers bought practically every available ship, headed by the famous American *Leviathan*, which was the biggest ship in the world when she was built as the German *Vaterland* just before the World War. She and a number of steel steamers, built for the U.S. Shipping Board between 1918 and 1920, crossed the Atlantic to be broken up.

Generally speaking, the passenger business during the year has been fairly prosperous, although handicapped by increased prices like the other sides of the shipping industry. The increased number of stewards demanded by the modern passenger has had much to do with that, while the individual stewards have to be better paid and very much better accommodated. A larger number of passengers have booked on most of the regular routes, but the special rush of overseas visitors to Britain for the Coronation of King George VI, and the use of passenger liners as floating hotels in the Thames during the Coronation season, proved very disappointing.

Generally speaking, yachting cruises in Europe have not proved as popular as in previous years, with the conspicuous exception of certain popular ships, whose owners have made a very special study of the demands of the business. One reason for this was certainly the necessity of cutting out the popular Spanish calls in the shorter and cheaper cruises. On the other hand, European passenger ships which have a convenient call from which there are good facilities for returning by another ship after a conveniently short stay have found a rapidly increasing number of holiday-making passengers, and more have booked for the whole of a long voyage for purely pleasure purposes.

Another very interesting development of the passenger business has been the increasing tendency to travel in the fast cargo liners, of which most of the modern ones have been designed to carry the maximum number of passengers without a passenger licence, generally 12. Although they cannot offer the social amenities of the purely passenger ship, their accommodation is usually very comfortable, and they are particularly popular with invalids ordered a sea voyage as a rest, and business men visiting their overseas connexions, who find the time that has to be spent in port handling cargo much more convenient than the short stays of the mail ships, which force them either to hurry their business or else waste time waiting for the next ship to call.

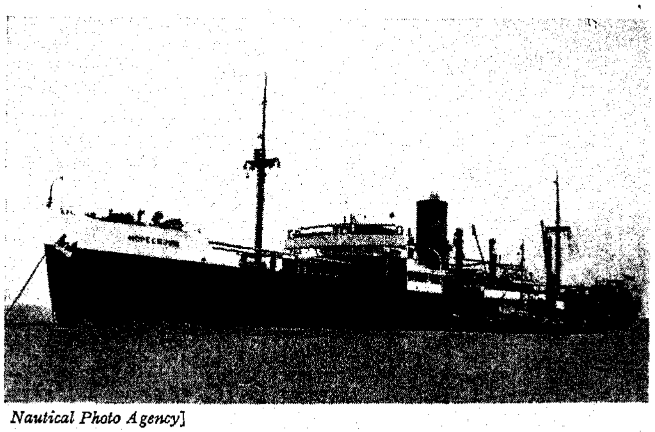
On the question of subsidies and trading restrictions the shipping world is divided, much as it was before, between the States which believe in the policy and those which do not. There have been no major changes of policy, and the principal alterations in detail have been in the United States, where the authorities have rationalized the payment of subsidies to save money where there has been inadequate national return. Although, in accordance with her usual practice, all details are kept secret until the plan is complete, Japan is generally understood to be preparing a complete revision of her subsidy system to right the weaknesses in her merchant navy revealed during the operations in China.

Russia's State fleet has been steadily increased, partly by purchase abroad, but principally by new construction under the current Five-Year Plan, and the charter of foreign ships for foreign trade has naturally declined. The ultimate aim of carrying all Russian trade in Soviet Government ships is constantly kept in mind. The use of the Northern Seaway across the top of Siberia—the North-East Passage which cost the lives of so many early explorers—has been increased, and the work of the scientific stations along it has eliminated many of its dangers, but this year has shown that it is still very much influenced by weather.

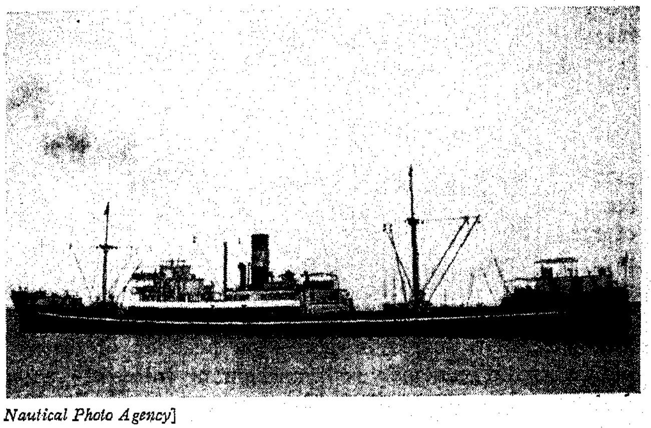
Several of the few remaining sailing ships have gone from the list, some through disaster and others through being worn out, but the big ones in Europe have, for the first time for many years, secured outward business for at least part of the their voyage to Australia and excellent freights for the carriage of grain home to Europe. At the same time their expenses are heavier, partly for the replacement of sails, etc., which is inevitable, and partly because the reduced demand for sail-trained seamen has robbed them of cheap crews.

The British Trinity House no longer demands sail experience before it will issue a sea-pilot's licence, and the Swedish Government has given up the same qualification for an officer's certificate. The German authorities, however, have refused to follow suit.

The shipping of practically every country in the world where trade-unionism is allowed has been embarrassed by labour troubles during the year, either in the docks or in the ships or both. (F. C. Bo.)


Nautical Photo Agency]

THE LATEST TYPE OF MOTOR TRAMP BUILT IN 1937 FOR A. STOTT & CO., LTD. OF NEWCASTLE (5,801 TONS GROSS)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THE LATEST TYPE OF STEAM TRAMP, BUILT IN 1937 FOR THE WHITE SHIPPING CO. OF NEWCASTLE (4,190 TONS GROSS)

SHOE INDUSTRY. Shoemaking is increasing rapidly the world over. Conservative estimates of production for 1937 indicate a 10 per cent. increase over the figures compiled by the United States Department of Commerce for 1936, which follow: Europe, 490 million pairs, (United Kingdom, 130 million pairs; Germany, 76 million; France, 50 million; Czechoslovakia, 30 million; and Russia, where estimates of outputs vary considerably, but reliable sources indicate not over 45 million pairs). North America, 449,721,000 pairs, (United States, 415 million; Canada, 22 million; Mexico, 5,250,000). South America, 45,520,000 pairs, (Brazil, 19 million pairs, and Argentina, 16 million). Asia and Oceania, 61,400,000 pairs, (Australia, 15 million pairs of leather shoes and a volume of slippers estimated at 6 million pairs; British India, 4,300,000 pairs; China, 7,500,000; Japan, 9,500,000). Africa had a total of 16 million pairs, of which the South African Union produces about 47 per cent. Production in the United States accounts for almost 40 per cent. of the world's total, with preliminary data placing the 1937 estimated output at 450 million pairs.

Two factors contributed to the increased world-wide shoe production: (1) increased efficiency and economy in shoemaking, and appreciation of the demand for a wider range of sizes and widths, necessitating larger basic stocks in warehouses and shops and in consumers' possession, and (2) footwear for military use because of wars and rumours of wars.

The mechanization of the shoe industry has been accelerated by the international use of the mechanical equipment now in universal use. Shoemaking skills will continue to increase in countries not now using machine-made shoes for general wear, because of the aptitudes developed through the use of the sewing machine.

Trading.—Export trade has been made more complicated by preferential rates of import duties granted in British Empire countries to products originating within the Empire. Other nations have established embargoes and quotas and higher duties to shelter their own shoe markets. The United States trade agreements have had little effect in increasing the export or import of footwear; and with the exception of a contemplated Czechoslovakian trade agreement, proposed in 1937, which was violently objected to by the shoe industry in the United States, there has been no conflict in reciprocal agreements.

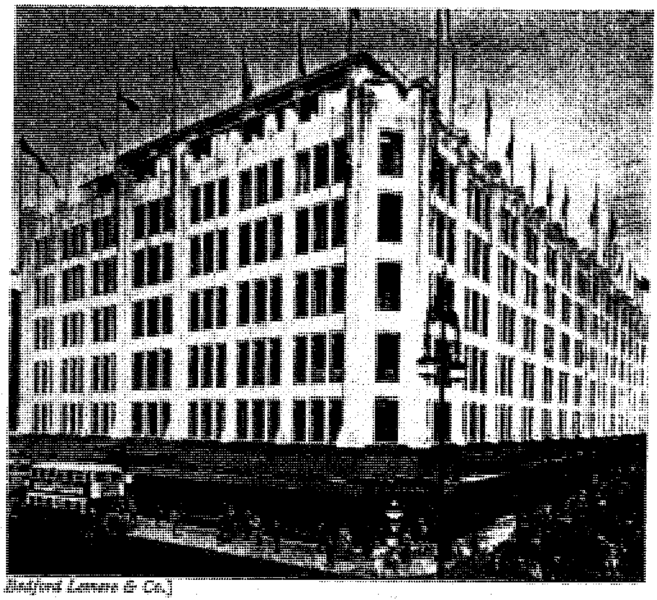
Rubber Footwear.—Rubber boots, galoshes, overshoes, and rubber-soled canvas shoes, showed signs of increasing in production in 1937, for certain types of rubber footwear can be made so cheaply in price that they serve most purposes of foot covering. The export and importation of rubber footwear between countries is decreasing; and it is doubtful whether the all-time record of 80 million pairs produced in 1933 will be surpassed.

SHOOTING. Probably a larger head of game was reared in Great Britain during 1937 than at any time since the War. While the sale and breaking-up of many large estates has had the effect of reducing the bags of individuals and on any one property, credit must be given to the system of syndicate shooting for the present satisfactory state of preservation obtaining to-day. It can also be said that more persons shoot now than formerly. If grouse were 'patchy' owing to the depredations of the heather beetle, and partridges scarce in places on account of disease, pheasants did extremely well, and among wildfowl greater numbers of geese, especially brent, have been in evidence. In America more attention is being directed towards methods of game preservation, partly perhaps because duck shooting—the mainstay of shooters there—has, since the recent years of drought, not reached its usual standard.

Clay-pigeon shooting, which affords excellent practice, continues to be a popular form of sport. In rifle shooting, the Scottish deer-stalking season produced a few good heads; while on the Bisley ranges the King's Prize was won for the first time by a member of the O.T.C.—D. L. Birney, lately of Cambridge University—and the Dewar Cup (miniature rifle shooting) was won by the English team for the first time for many years. (W. H. T. L.)

SHOPS AND DEPARTMENT STORES. The outstanding developments in the retail distributive trade during 1937 have been in the fields of legislation and labour relations. The Shops (Sunday Trading Restriction) Act, 1936, and the parallel Retail Meat Dealers' Shops (Sunday Closing) Act, 1936, made Sunday a general closing day for shops, with a number of specified exceptions. In their early months of operation, these measures appear to have worked satisfactorily, apart from local difficulties in certain parts of London, where there are street markets. In 1937 there also came into operation the clauses of the Shops Act, 1934, which provide a maximum 48-hour working week for young persons under the age of 18. Hitherto, there has been little regulation of wages and labour conditions in retail distribution. During 1937, steps were taken for the first time to remedy this situation through the medium of a series of conferences between employers' organizations and trade unions, held under the auspices of the Ministry of Labour. It is expected that these discussions will result in statutory regulation of minimum wages and conditions of labour. At the same time, a number of voluntary wage agreements were concluded during the year by the Shop Assistants' Union with multiple grocery firms and with some groups of provincial department stores.

In addition to the continued growth of chain store organizations, experiments were made in centralized buying for groups of independently controlled department stores and shops. Outstanding among new department stores erected during 1937 were one in Coventry, and another in Oxford Street, London. The latter embodies a number of novel features. Its layout has been planned to afford customers the maximum ease of access to the department



Bedford Lemere & Co.]

A NEW DEPARTMENT STORE BUILDING IN OXFORD STREET, LONDON. ARCHITECT: LOUIS BLANC they require, as against the more traditional policy of obliging them to pass through many other departments *en route*. Internal fixtures and display make the departments a series of little shops, a device with which department stores have been experimenting in recent years. (D. BA.)

SHOWS. Under this head are listed details of the most important shows, including agricultural, horticultural, horse, dog, and cat shows, held in Great Britain and the U.S.A. during 1937.

Agricultural.—In Great Britain a new challenge cup was offered at the Perth show for the best three bulls, offspring of one sire; and the champion bull fetched 700 guineas. The Duke and Duchess of Gloucester attended the Ayr centenary show, at which Mr. Kilpatrick won the male and British Friesian, and Mr. McAlister the Ayrshire cattle championships. The King won at the Devon Coronation show, and at the Royal Counties show, Reading, he showed the best young bull. The minister of agriculture visited the Three Counties show, where Herefords led with 98 out of 1,203 entries; ' Freetown Endor ' was champion bull and ' Phocle Rosina ' champion female. ' Greencroft Marquis ' was male champion at Newcastle, and also at Lancashire, where ' Holmescales Meadowsweet ' won the supreme championship for dairy cows. At the Royal show, Wolverhampton, 16 prizes went to Scotland. The Duke of Westminster won the Brackenhurst trophy. British Friesians won the Bledisloe trophy at the British Dairy Farmer's Association show, and ' Fothering Foggathorpe II's ' awards included the supreme individual championship trophy. At the National Dairy show, Mr. Ball won outright the Spencer challenge cup.

In the United States, at the Southwestern Exposition and fat stock show, 5,000 head of stock were entered and 250,000 people attended. Awards at the Illinois State fair amounted to $150,000, and at the Missouri State fair to $48,000, where attendance reached 270,800. The American Royal show laid emphasis on young farmers, and at the Nebraska show the chief competitions were for junior farmers. The 38th International Live Stock exposition was held in the new amphitheatre at Chicago stockyards. The judge of the international steer class was Alexander Ritchie, manager of the Royal farms at Windsor, England.

Horticultural.—At the Royal Horticultural Society's spring show at Chelsea, London, the Sherwood challenge cup went to Messrs. Allwood, the Cain challenge cup for amateurs to Mr. Lionel de Rothschild, and the trophy for the best six orchids by amateurs to Mr. Wharton. At the autumn show the Coronation cup was won by Messrs. Sutton, and also a silver gilt cup to commemorate the Accession. Similar cups went to Mr. J. Pierpont Morgan, Messrs. Hillier, and Mr. Stuart Ogg, and the Wigan rose cup to Messrs. Alex. Dickson. At the British Carnation Society's show the *Daily Mail* challenge cup was won by Messrs. Allwood. Only four new varieties were entered at the National Rose Society's show. To commemorate the Coronation, every gold medallist received a cup. At the National Dahlia Society's show the best new variety was by Messrs. Stredwick, and Mr. Valentine Smith won the amateur cup. Mr. Ingwersen won the Farrer memorial medal at the Alpine Garden Society's show.

At the International Flower show, New York, the New York Botanic Garden won a medal for Mediterranean plants. Entries from foreign countries were received for floriculture at the Illinois State fair, which included a gladiolus show. Nearly $1,000 were offered at the Missouri State fair for horticulture.

Horses.—At the British Shire Horse Society's show, Messrs. Mann, Crossman & Paulin produced the best commercial exhibit, and a judging competition for young farmers was held. The male, reserve, and female champions were similarly placed at the Royal show, where Messrs. Chivers won the male championship for percherons. Mr. Kilpatrick won the Glasgow Stallion show's supreme championship for the 12th time, and a Clydesdale won the 1938 premium of £100. Clydesdales from Scotland won at the Melbourne Royal show, Australia, and at the Canadian National exhibition.

In the United States, classes for draft horses were included in the International show at Chicago and the Illinois State fair.

At the International Horse show, London, foreign jumping teams came from the United States, France, Germany, Belgium, Rumania, Turkey, and Ireland, the last named winning the Edward, Prince of Wales, gold challenge cup. The King George V cup for officers' jumping went to France.

The Buccleuch Hunter Breeding Society inaugurated an annual show of hunters and young stock. Captain Buchanan owned the champion thoroughbred stallion at the Thoroughbred and Hunter show. Lord Inverclyde owned the champion hunter at the Kilmarnock show. At the Highland and Agricultural Society's show, 61 hunters, 35 Highland, and 29 Shetland ponies were entered.

At the American Royal show there were classes for all light horses and drills by artillery teams. The Illinois State fair had the same range of light horses in addition to draft horses. A novelty at the Southwestern exposition was ' Dressage ', the art of guiding a horse without apparent movement or sound.

Dogs.—In the English shows cocker spaniels led the numbers. In Scotland labradors were favourites. Cruft's had 9,949 entries. New breeds were Basenjis, hunting dogs from Central Africa, and Rottweilers, guard dogs from south Germany. At the Kennel Club show entries numbered 5,899. Novelties were pomeranian sheep dogs, a husky, and Bernese and Apenzell mountain dogs. The West of England Ladies' Kennel Society show had 5,607 entries, and there were 4,883 entries at the Ladies' Kennel Association show. At the Kensington show the Frank Butler memorial trophy went to Mr. Chapman's champion ' Heather Realization ', a Scottish terrier, who was best at the Ayr Centenary show, where there were over 2,000 entries in the dog section. At the National Terrier show 103 out of 1,539 entries were cairns; the supreme winner was a sealyham bitch. Dog breeders in Kenya sent in 200 exhibits to the East African Kennel Club show.

In the United States the Morris and Essex show offered 275 sterling silver trophies to be won outright; the best dog was an English setter. At the American Fox Terrier Club show the best was ' Glynhir Golden '.

Cats.—At the Blue Persian Cat Society's show entries were 353. Prizes for first adult male, best cat, and best exhibition went to ' Heatherland Blue Boy ', champion at Newbury. The Croydon show had 753 entries; the best was ' Sherry of Hanley '. At the Thame show, cat section, ' Daybell ' was the best adult male and best cat. (V. R.)

SIAM, kingdom of southern Asia between Burma and French Indo-China, extending southwards into the Malay Peninsula; area, 200,000sq.m.; population, 14½ millions. The king (*b.* 1926), Ananda, at present studying in Switzerland, succeeded on the abdication of his uncle and predecessor in 1935; a Council of Regency represents him pending his majority. The people are almost without exception Buddhists of the Hinayana school. There are two universities, one (founded 1934) being concerned entirely with social science teaching; elementary education is free and compulsory, and is carried on in some 9,000 schools, most of which are connected with Buddhist monasteries. The capital, Bangkok, had a population of 681,000 in 1937; other large towns are Chiengmai (545,000) and Ayuthia (300,000).

Since 1932, Siam has been ruled as a democratic constitutional monarchy with a Popular Assembly, and very rapid progress has been made in recent years in the modernization of the country, particularly since the abdication of King Prajadhipok (now living in England) in 1935. On Aug. 2, 1937, the Council of Regency resigned, after charges had been made of improper sales of land belonging to the king; it was re-elected without change two days later. A treaty of commerce and navigation with Japan was signed on Nov. 2, and a similar treaty with Great Britain on Nov. 23, by which in each case extraterritoriality was abolished. The project of cutting a canal through the Kra isthmus was revived in 1937, and at the end of the year there were strong rumours (subsequently proved groundless) that Japanese engineers were undertaking preliminary surveys.

Rice is the principal agricultural product; teak, tin, and hides are exported. Communications are being rapidly improved; there are 2,000m. of railroad, and recently an 18-year road plan has been put forward, involving an expenditure of some £15 millions; in the first five years 2,000m. of roads are to be reconstructed. The inland water communications, which are of the first importance, are being overhauled and modernized, and civil aviation is rapidly developing.

The 1937 budget provides for a revenue of £9,536,000 and an expenditure of £9,535,000. The currency unit is the gold baht (formerly the tical), exchanging at 11 to the pound sterling. In 1936–37 the total exports were £16,808,000 and imports £10,007,000. There is no State bank, but most of the Far Eastern and Chinese banks operate in the country.

Universal military service is exacted; the effective strength of the Army is over 25,000. The Air Force and Navy at present are being greatly strengthened, and submarines and warships are on order abroad.

SIBERIA, a geographical term formerly used to denote the whole of Asiatic Russia lying north of Kazakhstan, Mongolia, and Manchuria. The term has no longer any political significance, and even its survival in the Eastern Siberian Province and the Western Siberian Region of the Russian Soviet Federated Socialist Republic (*see* Map, *s.v.* U.S.S.R.) came to an end in Sept. 1937.

SIERRA LEONE. A British crown colony and protectorate in west Africa, lying between N. lat. 6° 55′ and 10°, and W. long. 10° 16′ and 13° 18′. Governor, D. J. Jardine, C.M.G. (appointed 1937); capital, Freetown. The colony consists of the original colony of freed slaves; the rest is the protectorate. It was decided in Dec. 1937 that Freetown was to be provided with a regular peacetime garrison to man its coast defences. The 150th anniversary of the colony's foundation was celebrated, jointly with the Coronation, in May.

Total area, *c.* 31,925sq.m. (colony, 4,000sq.m.). The population of the colony (est. 1935) was 101,960; in 1931 the Europeans numbered 420; pop. of the protectorate (1931 census) was 1,672,058, including 231 Europeans and 577 Asiatics. Freetown, the capital and port, had (1935) a population of 60,903. There are four secondary schools for boys, and four for girls.

The total length of railways in 1936 was 311 miles. The railway maintains the internal telegraph service, and the only telephone service is in Freetown. There is a broadcast service by the government. Cable and Wireless, Ltd., maintain a cable office. In 1936 the export of diamonds (first discovered in 1930) was valued at £500,124, and that of palm kernels at £583,645. Total exports were £2,376,965, and imports £1,346,715. The currency of the United Kingdom is legal tender, together with West African silver and alloy coins. Revenue for 1936 was £969,668, and expenditure £879,370.

SIKKIM. An independent but protected State, lying off the edge of the Darjeeling district of British India, in the mountainous country between Nepal and Bhutan. The ruler is Maharaja Sir Tashi Namgyal, entitled to a salute of 15 guns. Area 2,818sq.m., and population 109,808, comprising Buddhists and Hindus.

SILESIA, UPPER, the southern part of the former Prussian province of Silesia, was divided between Germany and Poland after a plebiscite in 1921. As the two parts were inhabited by Germans and Poles closely intermingled, and were rich in coal, iron, zinc, lead, and other minerals which had been previously exploited as a single economic unit, Germany and Poland, upon the recommendation of an Inter-Allied Commission, signed on May 15, 1922, the Geneva Convention to assure the protection of minorities and to preserve joint economic arrangements for a transitional period of 15 years. For three years the convention worked unexpectedly well. But in 1925, Germany began a trade war against Poland, and suspended the purchase of Polish Upper Silesian coal, causing hardship to Polish miners. In 1926, Dr. Michael Grazynski became governor of Polish Upper Silesia, and at once began, through administrative pressure and through a private army, a vigorous Polonization policy. German business men and employees were forced out under the pretexts of 'rationalization', 'reorganization', and 'incapacity of workers'. German commerce was boycotted and schools for German children were closed. By 1937, the German minority in Polish Upper Silesia had been reduced by a mass exodus from 250,000 to half that number.

On July 15, 1937, the Geneva Convention of 1922 expired. The Germans wanted to renew it, but the Poles refused. The Germans then extended to German Upper Silesia all the drastic Reich anti-Semitic laws, so that Polish Jews migrated to Poland, though Poland is no bed of roses for Jews. In Polish Upper Silesia, a renewed campaign began against Germans: Lutheran pastors were dismissed; the German press was punished; more Germans were thrown out of work; and a law was prepared for expropriating large German agricultural estates in order to parcel them out as small farms to Polish peasants. Feeling became so bitter that Germany and Poland decided to sign on Nov. 5, 1937, a new treaty protecting their respective minorities. But the Germans soon complained, and with reason, that the local authorities in Polish Upper Silesia were not living up to the terms or the spirit of the new treaty. *See* article SILESIA in *Ency. Brit.*; and W. J. Rose, *The Drama of Upper Silesia* (London, 1937).

(S. B. F.)

SILK. In Great Britain, the lack of any decision on import duties contributed to make 1937 a difficult year. Competition from Japan continued and imports increased from France, helped by the depreciation of the franc, and from Italy and Germany, which are subsidized for exports while import is practically prohibited. In Jan.–Nov. 1937, imports of foreign silk amounted to £2,413,000; Japan's share increased from £637,000 to £648,000, Italy's from £34,000 to £145,000, and Germany's from £210,000 to £267,000. Italy's output for the first 10 months of 1937 amounted to 22,102 centals (100kg.) of silk and 395,128 centals of rayon, though her silk crop did not come up to expectations in volume or quality.

In the largest consumer country for raw silk, the United States, two factors contributed to cause a decline in trade. The compulsory labelling of the artificial silk fibre rayon, which had been anticipated as a boon to the silk industry, showed that most of the garments were rayon and were giving satisfaction; that the silk industry in the fabric field was almost extinct. In hosiery, silk was still preferred, because of its superior elasticity over the rayon yarn. Experiments in knitting fine-type rayon yarns, however, were alleged to be given impetus by wider public knowledge of the satisfactory wearing quality of rayon in fabrics. An 'international incident' aggravated the situation. The Japanese war in China resulted in such a wave of anti-Japanese feeling that by the end of December some hosiery mills, the mainstay of the raw silk Japanese export trade, arranged to make cotton lisle hose to meet the consumer demand. While it was pointed out that in an average pair of women's silk hose only 10 cents' worth of raw silk was used, the other 70 cents being the value of American labour, the general boycott on things from Japan began to have its effect.

Statistically, the consumption of silk dropped definitely compared with the previous year. Better demand for silk occurred in the first four months of 1937, but after an average May and June, the remaining months witnessed a decline. Stocks of raw silk throughout the world, including Japan, China, Italy, England, the United States, etc., averaged 145,838 bales per month in 1937 compared with 160,871 in 1936.

SILK, ARTIFICIAL: *see* RAYON.

SILVER. The world's silver production is rather heavily centred in North America, which in 1929 furnished 75 per cent. of the total output, and in 1936 65 per cent.; Mexico is the leading producer with 31 per cent., followed by the United States with 25 per cent., Canada with 9 per cent., and the remainder of the continent (including Central America, West Indies, and Newfoundland) 2 per cent. The United States output has recovered from the effects of the depression, and has reached a level slightly above that of 1929, but Canada and Mexico are still low, the latter quite appreciably so. Although the United States, Germany, and especially Japan, Bolivia, and the Soviet Union, as well as several of the minor producers, have shown increases to above the 1929 level, the world total is low, owing chiefly to the heavy deficiency in Mexico, Canada, and Peru.

WORLD PRODUCTION OF SILVER
(In millions of fine ounces)

	1929	1933	1934	1935	1936
CANADA	23·1	15·2	16·4	16·6	18·2
UNITED STATES	60·3	21·0	26·4	38·3	62·8
MEXICO	108·7	68·1	74·1	75·6	77·5
REST OF N. AMERICA	2·8	6·0	4·6	4·6	5·2
PERU	21·5	7·3	10·4	17·1	19·0
BOLIVIA	6·2	5·5	5·2	8·0	10·5
REST OF S. AMERICA	1·7	0·6	1·4	1·6	1·8
GERMANY	5·5	6·3	5·9	6·3	6·3
U.S.S.R.	0·4	1·0	2·9	3·9	5·0
REST OF EUROPE	5·5	8·0	7·0	7·3	6·8
JAPAN	5·2	6·0	6·9	8·2	9·6
INDIA	7·3	7·3	6·9	6·9	6·7
REST OF ASIA	2·3	1·9	2·2	2·4	2·8
AFRICA	1·3	4·0	4·7	5·2	4·8
OCEANIA	9·9	11·6	11·3	12·4	13·7
TOTAL	261·5	169·7	186·4	214·4	250·8

British production of silver is comparatively small; the United Kingdom itself has only a negligible output, and Empire production centres chiefly in Canada, Australia, India, and South Africa. Empire production as a whole is still slightly under the 1929 level in ounces, but by less than the change in world output, so that the proportion of the world total in 1936 was 17 per cent. in 1936, against 16 per cent. in 1929, and preliminary reports indicate further improvements in 1937, particularly in Canada.

The recovery of production in the United States has been fostered by the nationalization of silver, and by inflated government purchases at an artificial price level far above world prices. The price of 77·57 cents per ounce for newly mined domestic silver, set by executive order on April 24, 1935, expired on Dec. 31, 1937, and was reset at 64·64 cents for 1938, the world price at that time being 44·75 cents. Government purchases have also included large amounts of foreign silver, at the world price, with favourable results on the foreign output. (G. A. Ro.)

SIMONS, WALTER, German lawyer and politician; born in Elberfeld, Sept. 24, 1861; died July 1937. Appointed in 1905 to the bench of the Upper Provincial Court at Kiel, Dr. Simons entered the Reich Office of Justice, Berlin, in 1907. In 1911 he joined the legal department of the Foreign Office. He took a prominent part in the negotiations of the war treaty with Turkey and of the Brest-Litovsk treaty with Russia. In 1918 he became Ministerial-Director under Prince Max of Baden, and retained that post after the revolution. Returning to the legal department of the Foreign Office, he went, in Jan. 1919, to Versailles as Commissioner-General of the German delegation, but resigned in June rather than accept the Allies' terms. From 1920 to 1921 he was Foreign Minister in the Fehrenbach cabinet, and from 1922 to 1929 was President of the Supreme Court of the Reich. From March to May 1925 he was Deputy President of the Reich, filling the gap between Ebert's death and the election of von Hindenburg. Apart from his political and legal activities, Dr. Simons was a prominent churchman, and was president of the Evangelical Social Congress.

SIMPSON, MRS. WALLIS: *see* WINDSOR, H.R.H. THE DUKE OF.

SIND. Formerly part of the Bombay Presidency, Sind was erected into a separate province by the Government of India Act of 1935. The governor since its inception (April 1936) is Sir Lancelot Graham, and there is a legislative assembly of 60 members, in which the Congress Party failed to secure a majority. There is a ministry of three, Sir G. H. Hidayat-ullah being the chief minister. The capital is the important city and port of Karachi (pop. 263,565), other towns of importance being Hyderabad (101,699) and Shikarpur (62,505). The area is 46,378sq.m., largely sandy desert; the population 3,887,070, of whom three-fourths are Moslems. The language is Sindhi, and the tract is wholly agricultural. Cultivation used to depend almost entirely on the annual overflow of the Indus; but the great Sukkur barrage now provides 5 million acres with irrigation. Karachi has a port trust with an income of nearly £500,000 and a capital debt of over £3 millions: the terminus of the North-Western railway system, it handles the grain export trade of upper India.

SINGAPORE, the capital of the Straits Settlements (*q.v.*) and main port of south-eastern Asia, is located on an island of the same name, 27m. long and 14 broad; area 225sq.m., at the tip of the Malay peninsula. It is situated at 1° 20′ N. Population (1936) 490,155, including 347,117 Chinese, 45,077 Malays, 41,402 Indians, 8,338 Europeans, 7,151 Eurasians, 3,695 Japanese, and 4,375 others. In 1819, Sir Stamford Raffles obtained Singapore, then a deserted island, from the Sultan of Johore for the East India Company for a small fee. It is now a major transshipment port, carrying on trade valued at £200 millions annually, with shipping of all sorts calling there, amounting to 30,366,511 tons in 1936. Commanding the main navigable channel through the maze of islands and treacherous reefs in the Malay archipelago, and standing at the crossroads of south-eastern Asia, where the main trade route from Suez and India diverges northward to China and Japan and southward to Australia and New Zealand, Singapore enjoys an advantageous position in naval strategy as well as in trade. It has been selected as the site of the largest British naval base in the Far East. This base is on the opposite side of the island from the city of Singapore and faces the Strait of Johore, which separates the island from the mainland. Two of its most striking features are an enormous graving dock, 1,000ft. long and 130ft. wide, completely surrounded by concrete walls and deep enough to handle any ship afloat to-day; and a floating dock, third largest of its kind in the world, which had to be towed out to Singapore in several parts, barely scraping through the Suez canal, and is able to lift a 50,000-ton battleship out of the water. By the end of 1937 a base capable of accommodating a powerful squadron of large battleships had been created on what was formerly a jungle swamp, although no considerable naval force had yet been concentrated there. Defence plans for Singapore contemplate co-ordination of land, sea, and air forces. Powerful coast artillery has been mounted at Changi, the town at the eastern entrance to the Strait of Johore. A good deal of attention is being paid to air forces, which include two squadrons of flying boats. Manœuvres which were held in February, 1937, with the participation of warships and aeroplanes from places as far removed as Hong Kong and Iraq, designed to test the defences of Singapore, yielded satisfactory results, according to the official statements which were issued at that time. Singapore is an important centre for commercial aviation, being a port of call both for the Imperial Airways and for the Royal Dutch Airlines. The new civil airport costing £1,000,000 was opened on June 13. On the neighbouring island of Pulau Brani is the largest tin-smelting works in the world. (W. H. CH.)

SIN KIANG (Chinese Turkestan), area 633,802sq.m., population 2,588,000, is one of the largest, remotest, and most sparsely populated sections of China. A large part of this vast territory consists of desert, which accounts for the scanty population. The principal towns are Kashgar (80,000), Yarkand (75,000) in the south-west, and Urumtsi (50,000) in the north. The latter is the seat of the Chinese administration. The chairman of the Provincial government is Li Yung. Sin Kiang is not an integral part of China, and is largely inhabited by peoples of Turki and Mongolian stock. Since 1931, the province has been disturbed by intermittent civil wars, which began with the rebellion of some of the Mohammedan tribesmen against the Chinese administration, but have been complicated by local tribal feuds and by Soviet intervention. Soviet troops entered Sin Kiang in 1934, and played an important part in driving back the Mohammedan rebels, who were threatening Urumtsi. Most of the province is now under the control of the Chinese administration, which is under strong Soviet influence; but some of the southern districts remain in the hands of the insurgents. A number of émigré White Russians have also been used by the Chinese officials to bolster up their authority. Even before Soviet political intervention took place, Sin Kiang had been gravitating towards the Soviet Union economically, because of the disruption through banditry and civil war of the ordinary long caravan routes to China. The completion in 1930 of the Soviet Turkestan–Siberia railway increased this trend; and Soviet exports to Sin Kiang increased from 418,000 roubles in 1923–24 to 15,698,000 roubles in 1932.

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SINO-JAPANESE WAR, the most serious international conflict that has occurred in the Far East since the Russo-Japanese War of 1904–05, began with a skirmish between Japanese troops, engaged in manœuvres outside of Peiping, and a Chinese garrison post at the Marco-Polo bridge, 14 miles south-west of Peiping, on the evening of July 7, 1937. Each side accused the other of firing the first shots; and an atmosphere of mutual suspicion and ill will paralysed subsequent efforts to settle the conflict as a mere local incident.

The Japanese Government on July 11 issued a statement to the effect that the gravity of the situation made it necessary to reinforce the Japanese garrison in North China with troops from Japan. Simultaneously, there was some concentration of Chinese Central Government and provincial troops at Pao-ting-fu, the capital of Hopei Province.

Despite these warlike preparations, efforts to reach a peaceful settlement were not altogether abandoned until the last week in July. Rumours of truce and agreement alternated with minor clashes. A more serious conflict took

Wide World Photos]

THE SINCER (BRITISH) DEPARTMENT STORE IN SHANGHAI AFTER BOMBARDMENT place at Langfang, a railway station between Peiping and Tientsin, on July 26, when the Japanese employed air bombing for the first time, as they alleged, to rescue a detachment of their troops which had been attacked by Chinese soldiers. The Chinese attributed the responsibility for the fight to the Japanese. On the evening of the same day Japanese troops were fired on when they were entering the Kwanganmen gate of Peiping.

Large-scale fighting started on the 28th, when the Japanese army launched a drive to push the Chinese troops from the environs of Peiping. Within a few days, despite a revolt of the Chinese police at Tientsin which seriously threatened the security of the small Japanese forces in that city, and a massacre of Japanese and Korean residents of T'ung-chow, the capital of the Japanese-dominated East Hopei régime, Japanese military control of the Peiping–Tientsin area had been effectively established.

The outbreak of warfare in North China cannot be understood without some consideration of its underlying political causes. Ever since the occupation of Manchuria in 1931–32, the Japanese military authorities had exerted constant pressure in North China. Under the terms of the Tangku Truce, signed on May 30, 1933, a demilitarized zone was created in the region between the Great Wall and the frontier of Manchukuo. In Dec. 1935, an independent régime, headed by Yin Ju-keng, was set up in this region, with the obvious support of the Japanese Army. Shortly afterwards a similar Japanese-dominated local administration was established in the northern part of the Province of Chahar. Wholesale smuggling by Japanese and Koreans, exploiting extra-territorial privileges, was another grievance of the Chinese; the existence of this smuggling was confirmed by several statements by the British Inspector-General of Customs, Sir Frederick Maze. The Japanese garrison in North China, maintained under the provisions of the Boxer Protocol, was substantially increased in the spring of 1936, so that Japanese troops in this region outnumbered those of all other foreign nationalities put together.

During 1936, there was a notable resurgence of Chinese nationalism, accompanied by much agitation for resistance to Japanese encroachments. The most spectacular demonstration of this was the detention of Marshal Chiang Kai-shek, Generalissimo of the Chinese forces, at Si-an-fu for two weeks in Dec. 1936. Among the demands of his captors, Marshal Chang Hsueh-liang and General Yang Hu-cheng, were the cessation of civil war against the communists and the organization of resistance to Japan. Chang Hsueh-liang and Yang Hu-chang went into retirement after Chiang Kai-shek's release. But the Nanking Government reached an informal agreement with the Chinese Communists, who discarded many of their social revolutionary ideas and put forward the idea of a united nationalist front against Japan. The Chinese Government systematically delayed consideration of two Japanese economic proposals for the development of North China with a combination of Japanese and Chinese capital. These were the construction of a railway from Shihchiachung to Tientsin and the exploitation of Lungyen iron deposits in Chahar.

In view of all these causes of friction and distrust, it is easy to understand why a relatively slight initial clash assumed steadily more serious proportions. Each side felt that any concession would be interpreted by the other as a sign of weakness.

North China Campaign.—There was a lull of almost two weeks after the occupation of the Peiping–Tientsin area. Each side was busy with further military preparations, while some feeble and abortive peace talks took place between the more moderate representatives of the two countries. Large-scale warfare unmistakably got under way in the second week of August. A Japanese forward thrust against Nankou pass, on the Peiping–Suiyuan railway, was quickly followed by the outbreak of fighting at Shanghai. Subsequent hostilities, until the end of the year, were carried on in two main theatres, North China and the Lower Yangtze Valley, although Japanese bombing aeroplanes carried out raids on towns far away from the immediate zones of hostilities, such as Canton, Nan-chang, Hankow, and Lanchow-fu.

The Japanese operations in North China began with a movement to the north-west, along the line of the Peiping–Suiyuan Railway. The Chinese offered resistance at Nankou pass, a strong natural position in the mountains, and fighting here, which began on Aug. 11, continued for more than a week. The Japanese carried out an encircling movement; and the position of the defenders of the pass was made more difficult by the advance of some units of the Kwantung Army (the Japanese army in occupation of Manchukuo), which led to the occupation of Kalgan, the largest town in South Chahar, on Aug. 25. By this time the defence of Nankou pass had been given up; and the subsequent Japanese advance to Paotou, the western rail-head of the Peiping–Suiyuan railway, met with little resistance.

A political factor favoured the Japanese forward movement in this region. There had been perennial friction between the agricultural Chinese and the nomadic Mongols; and the latter, to a considerable extent, threw in their lot with the Japanese and co-operated with them. An autonomous Mongol State, headed by Prince Yun, with its capital at Kweihwa, was set up late in October. Its territory included Suiyuan and the northern part of Chahar Province. The State has received a number of Japanese advisers.

The next Japanese military move took the form of a southward advance along the two main railway lines of North China, the Tientsin–Pukow and the Peiping–Hankow. By the end of September the Japanese had occupied Pao-ting, capital of Hopei Province, on the Peiping–Hankow line, and Tsangchow, a large town on the Tientsin–Pukow line.

The main Japanese military effort in October was directed against mountainous Shansi Province, which was invaded from two directions, from the north and from the east, along the Shihchiachung–Tai-yuan railway. There was some fairly severe fighting in the north, where the mountains offered good natural lines of defence, and the quality of the provincial troops was stiffened by an admixture of Central Government and Communist units. Ultimately, however, the converging movements of the Japanese toops were successful, and Tai-yuan, the capital of Shansi Province, was occupied on Nov. 8.

The Japanese advance southward along the Peiping–Hankow railway was pressed almost to the Yellow river, with the result that all of Hopei and a part of Honan Province were conquered. Farther to the east, along the Tientsin–Pu-kow railway, political considerations, combined with the barrier represented by the broad Yellow river in flood, checked the Japanese advance in the northern part of Shantung. It was hoped that the governor of Shantung, General Han Fu-chu, if given sufficient time, would swing over to the Japanese side, and that the extensive Japanese property, valued at some 250 million yen, located in Tsingtao, the chief port of Shantung, would be preserved intact if fighting were avoided in this town. So all the 15,000 Japanese residents of Tsingtao were evacuated towards the end of August, and Japanese property was sealed and placed in care of the local Chinese authorities. This attempt to safeguard Japanese property, however, was a failure. Beginning on the night of Dec. 18, Chinese troops commenced to destroy textile mills and other Japanese property in Tsingtao.

Except for the part of Shantung which is south of the Yellow river, Japan's military objectives in North China had been substantially achieved by the end of the year. A political consequence of the Japanese military occupation was the organization, on Dec. 14, of a new North China administration, headed by two elderly politicians who had formerly been associated with the so-called Anfu clique, Wang Ko-min and Tang Er-ho. General Count Juichi Terauchi, Commander-in-Chief of the Japanese Army in North China, assured the new régime of his support. Extensive Japanese plans for the development of North China's natural resources, especially coal, iron, salt, cotton, and wool, and for railway building, electrical power installations, and harbour construction have been drawn up, but are still in an embryonic stage of realization.

Shanghai–Nanking Front.—While the Japanese troops were carrying out the occupation of China's northern provinces, fiercer and more spectacular fighting was raging around the cosmopolitan commercial metropolis of Shanghai. Tension in Shanghai began to mount on Aug. 8, after a Japanese naval officer and soldier were killed by Chinese police near the Hungjao aerodrome. In this, as in most other details about the origin of the hostilities, there is a discrepancy between the Japanese and Chinese versions. The Japanese assert that the officer and sailor were killed without provocation; the Chinese state that they endeavoured to force entrance into the aerodrome.

The situation became increasingly threatening as the Chinese moved considerable forces of armed police into the zone which was supposed to be demilitarized after the Shanghai fighting of 1932, while new Japanese warships arrived off Shanghai. Actual skirmishing between Japanese and Chinese patrols started on Aug. 13. On the following day Chinese aeroplanes went into action for the first time, endeavouring to bomb the Japanese flagship, *Idzumo*, and other warships in the Whangpoo river. A major tragedy occurred when bombs, accidentally released from the aeroplanes, fell in two of the most crowded sections of the International Settlement, killing over 1,200 persons, the vast majority of whom were Chinese.

During the first ten days of fighting around Shanghai, the Japanese were heavily outnumbered and were definitely on the defensive. Their naval landing party, supported by the guns of the warships, experienced difficulty in holding the Hongkew and Yangtzepoo sections of the International Settlement, where most of the Japanese live. The first army units disembarked near Woosung on Aug. 23. On the same day another accidental bombing tragedy occurred when an aerial torpedo, apparently of Chinese origin, fell on the large Sincer department store, killing 173, and wounding over 500 persons.

After the arrival of the Army reinforcements, the initiative on the Shanghai front passed into the hands of the Japanese. However, the Chinese, throwing into the action many of their well-trained Central Government units, defended themselves with great stubbornness and courage.

Wide World Photos]

GENERAL VIEW OF CHANGCHOW FROM YUSHAN DURING THE JAPANESE ADVANCE TO NANKING, DECEMBER 1937

Except for one strategic retreat, carried out in good order, about the middle of September, the Chinese line, resting with its left flank on the Yangtze river and its right on the International Settlement, held very firmly for two months, despite the marked superiority of the Japanese in aircraft and in artillery.

A decisive turning-point in the struggle came on Oct. 25, when the Japanese battered their way into the village of Tazang, one key point in the Chinese defence line. This necessitated evacuation of Chapei, the main industrial section of the Chinese part of Shanghai, which was almost completely destroyed, partly by the heavy bombing and shelling to which it was subjected, and partly by the fires which the Chinese lit during their retreat.

The Chinese Retreat.—The attempt of the Chinese to make a new stand along Soochow creek near the western outskirts of the Settlements was short-lived, partly because their morale was depressed by the very heavy losses among their best divisions, partly because the Japanese threatened their right flank and rear by carrying out a landing near Chapoo, on Hangchow Bay, early in November. By Nov. 12, the Chinese were in full retreat from the environs of Shanghai.

Within a month the Japanese had swept over the stretch of 180m. between Shanghai and Nanking. Strong intervening lines of defence, notably one running through Kiangyin and Wusih, were abandoned with little resistance. The first real stand was made at the outskirts of Nanking; and several days of fighting were necessary before the Japanese completed the occupation of the Chinese capital on Dec. 13. Wuhu, a town farther up the Yangtze river, had already been taken.

Results of the War.—Judged from a purely military standpoint, the war up to the end of 1937 represented a clear-cut victory for Japan. Approximately 400,000sq.m. of Chinese territory had been occupied; the Japanese in the north had reached approximately the line of the Yellow river, while in Central China the Japanese flag flew over Nanking, the nationalist capital, and Shanghai, China's largest port and industrial centre. The Chinese air force had been largely put out of action, although the arrival of new aeroplanes from Russia was being reported in November and December.

Estimates of losses have been confused and contradictory; but it is doubtful whether Japan's casualties, in killed and wounded, during 1937 were much in excess of 100,000. Chinese losses were at least four or five times as heavy, and were all the more keenly felt because it was largely the relatively good, modern-trained units that were decimated in the fighting around Shanghai. One of the weakest spots in the Chinese preparation for war was the organization of military hospitals and care of the wounded. Consequently, an abnormally high percentage of the Chinese wounded either died or suffered permanent disability.

While the Chinese displayed more nationalist spirit and fought harder than in any previous clash with Japan, certain Japanese points of military superiority proved of decisive significance in determining the outcome of the operations, during the first months of the war. The Japanese army was a modern military organization, responsive to centralized command. The Chinese army, on the other hand, was a heterogeneous combination of some fairly well-equipped and trained divisions, subordinated to the Central Government, with masses of raw provincial levies, untrained in modern warfare and owing allegiance to individual 'war-lords', or governors of provinces, rather than to the Central Government.

Especially in the north, the semi-independent status of such provincial governors as Han Fu-chu, in Shantung, was an almost insuperable obstacle to the carrying out of a unified plan of defence. In the Shanghai–Nanking area, where the problem of the autonomous war-lord was not so serious, the Chinese fought under the disadvantage of facing an opponent tremendously superior in artillery and air power. While the Chinese soldiers in many cases displayed great courage, holding their positions during days and weeks of heavy bombardment, the quality of their staff work and intelligence service was definitely inferior.

Japan's military victories by the end of the year had not led to the capitulation of the Chinese Government. The capital was transferred from Nanking to remote Chungking, in Szechuan, about the middle of November. Government offices were distributed among several towns, including Hankow, chief city of the Middle Yangtze and Chang-sha, in Hunan Province. Generalissimo Chiang Kai-shek issued several public statements professing an intention to fight to the end.

International Aspects.—Any war affecting China is almost certain to arouse international complications, because of the number and complexity of foreign interests in that country. Apart from questions of trade and investment, certain foreign loans are secured by assignments from the customs revenue; there are foreign residential areas, of which the International Settlement and the French concession at Shanghai are the largest, which are not under Chinese administration. The United States and those European countries which enjoy extra-territorial rights in China have stationed troops in Peiping and Tientsin under the terms of the Boxer Protocol, and since 1927 several foreign powers have kept troops in Shanghai. It has also been a practice of American, British, French, and other foreign warships and gunboats to stand off Chinese coastal and river ports to afford protection and refuge to their nationals in periods of stress and commotion.

The immediate reaction of the outside world to the outbreak of hostilities in North China was one of relative apathy and aloofness. The time was not propitious for foreign intervention. Great Britain was preoccupied in Europe. The United States seemed committed to an isolationist foreign policy. The Soviet Union, by withdrawing troops from two disputed islets in the Amur river after one of its gunboats had been sunk by Japanese batteries, had given clear indication of unwillingness to fight, except in absolute self-defence.

The American Secretary of State, Mr. Cordell Hull, on July 16 issued a general statement of principles which America considered applicable to international affairs. Most governments expressed agreement with this statement, although Japan added a significant reservation, referring to 'actual peculiar circumstances of the Far East'.

On Aug. 26, the British Ambassador to China, Sir Hughe Montgomery Knatchbull-Hugesson, while motoring from Nanking to Shanghai, was wounded by a machine-gun bullet fired from an aeroplane which British officials who were in the automobile described as Japanese. A British protest delivered to the Tokyo foreign office on Aug. 29 emphasized the general illegality and inhumanity of the act and requested an apology, punishment of the individuals responsible for the shooting, and assurances against similar acts in the future. After a protracted investigation the Japanese Government, in a note of Sept. 20, admitted that 'the incident may have been caused by Japanese planes which mistook the Ambassador's motor-car for a military bus or truck', expressed deep regret, promised 'suitable steps' if the guilt of Japanese aviators should be established, and declared that 'instructions have been sent again to the Japanese forces in China to exercise the greatest care in safeguarding non-combatants'.

The Advisory Committee of the League of Nations, created at the time of the dispute over Manchuria, condemned the 'bombing of defenceless Chinese towns by Japanese aeroplanes' on Sept. 28. President Roosevelt, in a speech at Chicago on Oct. 5, strongly condemned 'aggressor nations' and urged 'peace-loving nations to make a concerted effort in opposition to the violations of treaties'. On the following day the American State Department accused Japan of violating the Kellogg Pact and the Nine-Power Treaty. The League of Nations Advisory Committee adopted a resolution to the same effect, and proposed a conference of signatories of the Nine-Power Pact.

This conference, held at Brussels during the first part of November, led to no positive results, because no delegation of the participating Powers, except the Chinese, proposed any programme of concrete action. Japan twice declined invitations to take part in the conference, adhering to its general principle of insisting on a direct settlement of the conflict with China.

New serious international incidents occurred on Dec. 12. The United States gunboat *Panay* and a Standard Oil tanker were sunk in the Yangtze river by bombs dropped from Japanese naval aeroplanes. Three Americans and one Italian were killed and some fifteen were wounded. American feeling was further inflamed by reports of machine-gun fire from Japanese Army launches, directed against survivors who were escaping in boats. The Japanese Government offered apologies and indemnification, and promised 'to deal appropriately' with those responsible for the bombing. An American note, published on Dec. 15, demanded from the Japanese Government 'an assurance that definite and specific steps will be taken which will insure that hereafter American nationals, interests, and property in China will not be subjected to attack by any Japanese armed forces whatsoever'. Shelling of the British warships *Ladybird* and *Bee* and of some British commercial vessels by Japanese shore batteries at Wuhu on the same day, Dec. 12, elicited a stiffly worded protest from the British Government. *See* also Armies of the World; Chiang Kia-shek; China; Great Britain; International Law; Japan; Neutrality; Nine-Power Conference; Shipping, Merchant Marine; United States.

(W. H. Ch.)

The *Panay* case was settled after an exchange of notes between the Japanese and American Governments on Dec. 24 and 25. The American note accepted the Japanese expressions of regret and promises of indemnity, punishment of the guilty, and intensified precautions against future incidents of this nature, while expressing belief in the findings of the United States Navy Court of Inquiry which was set up to investigate the matter. There were official complaints of depredations in American property in Nanking by Japanese troops in January; and the American consular official in charge of the embassy at Nanking, Mr. John M. Allison, was slapped by a Japanese soldier while investigating one of these cases on Jan. 26. American remonstrances were followed by official Japanese assurances of regret, investigation, and punishment.

Japanese military activity, which subsided for a time after the capture of Nanking, was renewed with the crossing of the Yellow river and the occupation of Tsinan-fu, capital of Shantung province, on Dec. 26. Tsingtac, the most important port in Shantung, where the Chinese in December had destroyed Japanese mills valued at 250 million yen, was taken on Jan. 11. Further Japanese activity during January consisted mainly of a northward push from Nanking and a southward push from Tsinan-fu, along the line of the Tientsin-Pukow railway. The converging Japanese movement was directed against Hsuchow-fu, an important junction point where the Lunghai railway intersects the Tientsin-Pukow railway.

Japanese peace offers to China through the medium of the German ambassador to China, Dr. Oskar P. Trautmann, yielded no positive results; and on Jan. 16, after a conference of high military and civilian officials in the presence of the emperor, the Japanese government announced its intention to cease dealing with the Chinese National government. The Chinese ambassador, Mr. Hsu Shih-ying, left Tokyo soon after this declaration; and the Japanese ambassador, Mr. Shigeru Kawagoe, returned to Japan from Shanghai.

SISAL, HEMP, AND CORDAGE FIBRES. Recently the production of hard hemp fibres such as sisal, manila, and henequén, which are used for marine cordage, binder twine, and other commercial cords and twines, has increased considerably, rising in seven years from an annual production of 500,000 to 535,000 tons, while the production of the true hemp used for soft twines and cords has declined over the same period from 514,000 to 320,000 tons. A revival in the production of true hemp fibre is, however, imminent, since it has attracted attention as an economy crop in several countries, where its admixture in the manufacture of textiles has been officially ordered as a means of reducing purchases of cotton imports.

A notable development in the cultivation of sisal has been the large plantations established by Europeans in Tanganyika and Kenya. The former now occupies the leading place as a producer of sisal, having doubled its output from 41,000 tons in 1929 to 81,000 in 1936, thus making sisal its most important product for export (41 per cent. of the total). In Kenya, where the output has been raised from 16,000 tons per annum to 32,000, sisal forms 18 per cent. of the total exports, ranking next to coffee in importance. Among producers of other hard fibres the Philippines, with their output of over 192,000 tons of manila, lead the way, followed by Mexico (84,000 tons of henequén) and the Netherlands East Indies (manila 5,000 tons, sisal and cantala 77,000 tons).

For the leading producer of true hemp-fibre crops, the Soviet Union, the present five-year plan is said to have called for the planting of 1,511,000 acres to hemp fibre in 1937, an increase on recent years, but less than in 1929 when the acreage was 2,156,000 and the output 310,000 tons. Italian output declined heavily after 1930, but a substantial recovery was recorded for 1936, and production for 1937, as given by the International Institute of Agriculture, was 237,741,000lb. There has been an increase in acreage in the Balkan countries, particularly in Yugoslavia, where the acreage of 141,000 planted for 1937 was slightly larger than in 1936. The Greek government decreed that an effort should be made to develop hemp growing in that country, and that 1,500 acres be planted to hemp in 1938. The acreage in 1937 was only 200. New methods of utilizing hemp waste are said to have been developed, including a process for the manufacture of hemp-waste wallboard, which can be used in building construction or stored as cellulose supply for the manufacture of high explosives, just as wood-pulp cellulose is stored for war purposes.

Sunn hemp fibre grown in India varies within wide limits, and over half a million acres are planted annually, but about a quarter of this was ploughed in as green manure in the season 1935–36. Imports of Sunn hemp from India into the United Kingdom in 1936 amounted to 10,000 tons.

The chief importers of cordage fibres in 1936 were the United States (175,000 tons), the United Kingdom (90,000 tons), and Japan (86,000 tons). In the United Kingdom the linen and hemp trade and the rope, twine, and net trade consume 90 per cent. of retained imports.

SKATING. The world's speed skating championship, 1937, was won by Ivar Ballangrud, Norway; and the figure skating champions were: *Men's*, Karl Schafer, Austria; and *Women's*, Cecilia Colledge, Great Britain. The winners

Keystone]

MAXI HERBER AND ERNST BAIER, THE WORLD PAIR SKATING CHAMPIONS, ON THE KULUR RINK AT ST. MORITZ, DECEMBER 1937 of the European championships were: *Mens'*, Felix Kasper, Austria; *Women's*, Cecilia Colledge; *Pairs*, Baier and Maxi Herber. The English figure championship, international style, was won by: *Men's*, G. Sharp; *Women's*, Cecilia Colledge; and Dr. E. A. Johnstone won the British amateur championship (English style). F. Tomlin, in May, lowered the indoors mile record to 2mins. 51⅕secs. As an indoor spectacle this sport continued to attract huge crowds in metropolitan areas of the U.S.A. The national amateur speed skating championships were held at Petoskey, Mich., February 6 and 7. Marvin Swanson, of Minneapolis, won the men's title for the third consecutive year. Miss Madeline Horn, of Beaver Dam, Wis., gained the women's title. The indoor championships were held in the Chicago Arena, March 27 and 28. Leo Freisinger won the men's championship by a comfortable margin. Miss Madeline Horn and Mrs. Dorothy Franey Drolson tied for the women's title at 80 points. The American figure skating championships were held in the Chicago Arena, February 12 and 13. Seventeen-year-old Robin Lee, of Minneapolis, won the men's championship for the third successive year, and Miss Maribel Y. Vinson, of Boston, won her ninth title in the women's competition.

SKIING. The world's championship meeting was held at Chamonix on Feb. 12, and was won by Norway in 3hrs. 6mins. 7secs., with Finland second and Italy third. On Feb. 18 Pekka Niemi (Finland) won the 50-km. Langlauf, with Karpinnen (Finland) second and Demetz (Italy) third. In December Oxford won the annual contest against Cambridge. Lack of snow seriously impeded this sport in the U.S.A. Warren Chivers of Dartmouth college won the U.S. combination cross-country and ski-jumping championship in the two-day competition at Minneapolis, Minn., Feb. 13 and 14. Dick Durrance of Dartmouth won the national amateur downhill championship over the course on Boulder mountain, near Ketchum, Idaho, March 13, and won the national slalom title on the following day. The United States Eastern Amateur Ski Association's annual jumping championships had in its entry a fine array of international talent. The contests marked the official opening of the 60-metre slide on Rowe mountain in New Hampshire, Feb. 28. Sigmund Ruud of Norway, with leaps of 218 and 202 feet, won the class A jumping by the slim margin of nine-tenths of a point over his compatriot, Sverre Kolterud, who leaped 214 and 204 feet. Kolterud was adjudged winner of the Eastern combined championship, having won the cross-country race the previous day.

E. Meerkämper]

ON THE SKI-FIELDS AT DAVOS, SWITZERLAND

SMIGLY-RYDZ, EDWARD (1886–), inspector-general and marshal (from Nov. 1936) of the Polish Army, and since July 1936 leading citizen of the Polish State, taking rank immediately after the president, since the death of Marshal Pilsudski in 1935 has been virtually dictator of his country. In his early years he studied painting, and later took part, as a legionnaire, in the Russo-Polish war of 1921, and was responsible for the Polish capture of Kiev. Succeeding Pilsudski in the leadership of the army, in May 1936 General Smigly-Rydz entrusted Colonel Adam Koc with the formation of a programme 'suited to the interests of the Polish State', and in April 1937 announced his support, and that of President Moscicki, of the consequent 'National Unity' campaign. On Nov. 21 he broadcast an appeal for the unity of the nation on the basis of Colonel Koc's proposals.

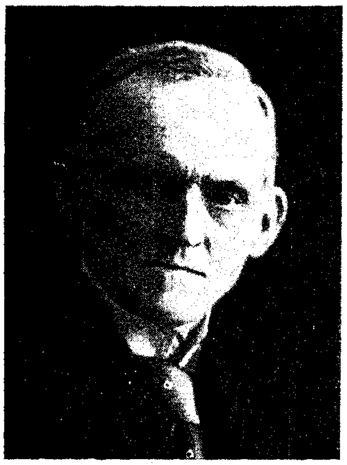
SMITH, ANNIE LORRAIN, British botanist: born at Halfmorton, Dumfriesshire, Scotland, Oct. 23, 1854; died in London, Sept. 7, 1937. She was eminent in the field of lichenology, having written the second volume (1911) of J. M. Crombie's Monograph of Lichens, and rewritten the first volume (1918). Her text-book on lichens (1921) is the most thorough and exhaustive book on this subject yet published. She contributed the article on Lichens in the 14th edition of the *Encyclopaedia Britannica.*

SMITH, SIR GRAFTON ELIOT, British anthropologist; born at Grafton, N.S.W., Aug. 15, 1871; died in London, Jan. 1, 1937. He studied medicine at Sydney and Cambridge Universities and held successively the chairs of anatomy at the University of Manchester, the Egyptian Government School of Medicine, and the University of London. From 1913 to 1919 he served as a member of the General Medical Council. He was a past-president of the Anatomical Society of Great Britain and Ireland, of the Manchester Literary and Philosophical Society, and of the anthropological section of the British Association for the Advancement of Science. The Royal Society and the Royal College of Surgeons awarded him gold medals. His publications included *The Ancient Egyptians*, 1911; *The Royal Mummies*, 1912; *Tutankhamen*, 1923; *Migrations of Early Culture*, 1915; *The Evolution of Man*, 1924; *The Search for Man's Ancestors*, 1931; *In the Beginning*, 1932; and *The Diffusion of Culture*, 1933. He was knighted in 1934. In 1900 he married Kathleen Macredie, and he had two sons.

SMYTH, HERBERT WEIR, American classical scholar, a biographical notice of whom is to be found in the *Ency. Brit.*, vol. 20, p. 848, died at Bar Harbor, Maine, on July 16, 1937.

SNOOKER: *see* BILLIARDS.

SNOWDEN, PHILIP SNOWDEN, 1st Viscount, of Ickornshaw, British statesman; born at Cowling, Yorks., July 18, 1864; died at Tilford, Surrey, May 15, 1937. For a biographical notice, *see Ency. Brit.*, vol. 20, p. 856. Snowden remained Chancellor of the Exchequer on the



Elliott & Fry]

THE LATE VISCOUNT SNOWDEN

formation of the National Government in 1931, and after the general election of that year, was created a Viscount and remained in the cabinet as Lord Privy Seal until Sept. 1932, when he resigned owing to his disagreement with the Government's tariffs policy. Lord Snowden's subsequent speeches in the House of Lords were characterized by the bitterness of his criticisms of the Government, and particularly of Mr. Ramsay MacDonald. His later publications included *An Autobiography* (2 vols., 1864–1932), 1934. The peerage became extinct at his death.

SOAP, PERFUMERY, AND COSMETICS. The development of the Toilet Preparations Industry during 1937 has been chiefly remarkable in the province of cosmetics. Thus, modern face powders are no longer produced by the simple but antiquated mixing process, but are scientifically blended in centrifugal screening and sifting machines. Likewise, beauty milks and creams may be perfectly dispersed and stabilized by means of colloid mills and homogenizers. Petroleum derivatives, though cheap, are beginning to lose some of their popularity to oils of animal and vegetable origin. Preparations that have but recently come to the fore include foam baths, soapless shampoos, and the group of hormone and vitamin creams, etc., known collectively as ' biological ' preparations.

Chemically, the most important feature of the year has been the controversy over Vitamin F (isomeric linoleic acid), known to the trade as the ' skin vitamin '. Many scientific workers have expressed doubt as to the desirability of terming this body a vitamin. Others have upheld the use of the term. From the practical point of view, the question of nomenclature is of minor importance. Though inconclusive, the opinion of manufacturers who have already used Vitamin F seems on the whole to be favourable, especially where it has been employed in association with other actual skin ingredients, namely, lecithin and cholesterin.

Technical improvements in soap manufacture relate in the main to the production of better-quality soap flakes and soap powders—products that, owing to their convenience and ready solubility, are steadily replacing the older bar soaps.

The most notable feature in the manufacture of perfumery and toilet waters is the increasing use of synthetic chemicals, as opposed to flower oils and other natural materials. Undoubtedly the chief developments over the past year are the synthesis of jasmone (characteristic constituent of natural jasmine) and the widespread use in high-grade perfumes of ' heady ' products of the cyclopentadecanone series.

On the business side, the chief event in the U.S.A. has been the increase of Federal control, prohibiting false advertising and unfounded claims. In Great Britain the Soap Makers' Association and the Perfumery, etc., Section of the London Chamber of Commerce have made good headway in meeting trade problems.

The leading world producers of soaps, perfumes, and cosmetics are U.S.A., Great Britain, France, and Germany. The industry is fast developing in South Africa, Canada, and Australia. Official production statistics are as follows: U.S.A., $308,000,000 (£61,600,000); Great Britain, £26,255,000 ($131,275,000); while the total amount actually spent by the public on hair waving, beauty treatment, toilet preparations, etc., is approximately four or five times as much as these figures indicate. (F. V. W.)

SOCIAL CREDIT was adapted by Mr. William Aberhart, Premier of the Province of Alberta, Canada, from the monetary theories of Major C. H. Douglas, who claims that business crises are caused by lack of purchasing power (money). Under the proposed Alberta social credit plan, this deficiency of purchasing power is to be remedied by issuing to each citizen a ' basic dividend ' of $25 per month in non-negotiable certificates. These certificates are blank forms to be filled out by a debtor in favour of a creditor; the recipient must then deposit the certificate with a bank or Provincial credit house, where the amount of the certificate is placed to his credit. The natural resources of the Province, called ' Cultural Heritage ', are the credit on which these certificates are to be issued.

A price control system is to be introduced to fix a ' just ' price at which goods and services are sold, together with a turnover tax. For example, it is suggested that the just price for wheat should be 60 cents a bushel to the grower. A tax of five cents would be levied on each bushel at the time of sale; an additional tax when the grain is converted into flour; and when the flour is made into bread still another tax. In this way it is hoped to recover the amount paid out in basic dividends.

Up to Jan. 1, 1938, the plan had not been put in operation. An attempt to issue script called ' Velocity ' dollars had also been abandoned. (*See* also ABERHART, WILLIAM; ALBERTA.) (J. T. C.)

SOCIALISM. The Socialist movement in Europe and in the United States in 1937 gave much attention to means of combating trends towards fascism and war in their respective countries and in the world at large.

In Great Britain, the Labour party began its year's activity with the issue of a new manifesto, ' Labour's Immediate Programme ', which included demands for social legislation and the nationalization of banking, coal, power, and transport. The party during the year won sweeping victories in London and in other municipalities. As a result of the November municipal elections, Labour became the major party in 57 of the 130 large town councils of the country. At its October congress, the Labour party, reversing its former stand, voted not to oppose the government's rearmament programme. It reaffirmed its solidarity with the republican government in Spain, and increased the representation of the branches of the Labour party on the executive committee from five to seven. George Dallas was elected the chairman of the executive. Sir Stafford Cripps and Harold J. Laski were elected to the executive as the additional representatives of the party branches.

In the United States, the Socialist party actively participated in the movement for the formation of State and national labour and farmer-labour parties and in a trade union organization campaign. At the party's Chicago convention in late March, the delegates present, in their Labour party resolution, declared that ' the great awakening of the workers requires as its logical next step the definite development of independent working class political action ' and instructed party members ' to give all possible support to the proper formation of such a party on a national scale'. They urged vigorous support for the industrial union policy of the C.I.O., while appealing for unity in the ranks of labour. They outlined a programme for avoiding war and maintaining civil liberties, for aiding the Spanish Government, improving agriculture, and building consumers' co-operatives. Members of the Socialist party took a leading part during 1937 in the Wisconsin Farmer-Labour Political Federation and in the campaign on behalf of a labour slate in Detroit and other cities. In New York City the Socialist party supported numerous independent candidates of the American Labour party in the autumn elections. The Social Democratic Federation, a right-wing socialist organization, held a convention in Pittsburgh in May 1937, and adopted a programme of organization and action.

On the continent of Europe the government of Léon Blum, leader of the French Socialist party, came to an end on June 21, following the refusal of the senate to give the premier full power to handle the financial issue. A few days later Blum became vice-premier in the Chautemps government. The French Socialists in November suspended unity negotiations with the Communists, as a result of a bitter attack on Socialists made by the secretary of the Communist International, Dimitrov. Many Socialists vigorously criticized the government for enforcing an embargo on war materials destined for the Spanish Government.

In Spain, the year was devoted primarily to resistance to the insurgent forces under Gen. Franco. Caballero, the left-wing Socialist leader, resigned from the premiership on May 15, and was succeeded by the moderate Socialist, Juan Negrin, who organized a 'win the war' cabinet. The new cabinet contained three right-wing Socialists, including Prieto, leader of the party, two Communists, two Catalan Left Republicans, one Catalan Nationalist, and one Basque Nationalist. The Anarchists were excluded from participation. Much friction existed throughout the remainder of the year between the government and the General Union of Workers—the C.G.I.—of which Caballero was the general secretary. On Jan. 5, 1938, Caballero resigned that position. The new executive adopted a programme of full co-operation with the government.

In Belgium, Emile Vandervelde, leader of the Belgian Labour party, resigned as minister of health in the Van Zeeland cabinet in early 1937 during a dispute over the Government's 'sharp' note to the Spanish Government. Paul Spaak and Henri De Man, leading Socialists, remained in the cabinet as foreign secretary and minister of finance respectively. Arthur Wauters, Socialist, was appointed to Vandervelde's place. In the by-election in April, the Belgian Socialists supported Van Zeeland against his Rexist opponent.

The Finnish Social Democratic party, during the early part of the year, entered the nation's cabinet for the first time in a decade. As the strongest party in the country, it was allotted 5 out of the 12 cabinet seats. The Norwegian Labour party was signally successful in the municipal and rural elections of October. In Europe as a whole, the Socialist, Labour, and Social Democratic parties ended the year as the largest parties in the three Scandinavian countries—in each of which the premiers were Socialists—in France, Spain, Switzerland, Czechoslovakia, and Finland. They constituted the second largest political groups in Great Britain and Holland. (*See* also LABOUR PARTY; SOCIALIST PARTY.) (H. W. L.)

SOCIALIST PARTY, THE. Under this heading are described the activities of the Socialist Party in the United States. (For Great Britain *see* LABOUR PARTY.)

This party in the United States entered the year 1937 numerically at low ebb, but active in Labour's mass organization drive, especially in the C.I.O. (Committee of Industrial Organization). The party campaigned actively under the leadership of Norman Thomas and George Nelson, candidates respectively for president and vice-president in 1936, with no expectation of holding its vote of 1932, much less of becoming the mass Labour party in the political field, the establishment of which it greatly desires. The reason for the campaign was that the party believed that, under the conditions existing in America, only so could the real issue, Socialism versus Capitalism, be kept in the minds of the people and socialist educational work in the fullest sense of the term be carried on.

The party in 1936 lost over organizational and doctrinal issues a considerable part of its right wing. The secessionists formed the Social Democratic Federation and most of them supported Roosevelt in 1936. The party gained in 1936 and 1937 some hundreds of Trotskyists whom, however, it was obliged to expel in Sept. 1937 for disloyalty and for disruptive activities. At its conventions in 1936 and 1937 the Socialist party took a generally leftist position and especially declared its opposition to 'collective security' as a possible or desirable road to peace in the capitalist nationalist world.

American Socialists are willing to co-operate with all working-class groups, especially in the trade union field. But they are opposed to the Communist personal party dictatorship in Russia and Communist opportunism in America. Socialists seek to work out and to gain acceptance of terms on which they can work within genuine local and State Labour parties in election campaigns while maintaining their party's identity and organization for all other work. In line with this policy, the party supported the labour ticket in Detroit, and had a partial electoral agreement with the American Labour party in the New York municipal election. (*See* also SOCIALISM.) (N. T.)

SOCIALIZED MEDICINE: *see* UNITED STATES: § *Socialized Medicine.*

SOCIAL SECURITY. Measures in operation in the United States to cope with various forms of want and disability are considered under this heading. For Great Britain, *see* NATIONAL INSURANCE; PUBLIC ASSISTANCE.

The varied programme embodied in the Federal Social Security Act approved on Aug. 14, 1935, approached almost legislative completion in 1937. Of the many systems set up by the act only one—the old age insurance plan—requires no complementary State legislation.

With the enactment of 15 new laws early in 1937, all American States and territories placed unemployment insurance laws on the statute books. Unemployment benefits were paid during 1937 only in Wisconsin. From Aug. 1936 to the end of July, 1937, this State paid a total of $1,080,000 to 52,667 unemployed workers, an average of $20.50 to each beneficiary for the year. By Nov. 30, $1,887,000 were distributed among 70,000 beneficiaries. Thirty jurisdictions are due to start benefit payments to unemployed workers in 1938.

With the enactment of seven new laws in 1937, providing assistance for the needy aged, 47 States, the District of Columbia, and the territories of Alaska and Hawaii have placed such legislation on their statute books. Only

Virginia was without such a law. At the end of Sept. 1937, there were 1,469,998 old age assistance recipients as against 862,402 during Sept. 1936. While the average payment per recipient for the whole country that month amounted to $18.97, the grants varied greatly in the different States. The range was from $4.39 in Mississippi to $40.06 in Colorado. The ratio of recipients to population also continued to vary greatly in the different States. Whereas Tennessee paid grants to only 38 persons out of every 1,000 persons 65 years of age in that State, Oklahoma was making grants in Sept. 1937 to 589 persons out of every 1,000 of its aged population.

Applications under the Federal old age insurance system totalled over 34,500,000 by the end of September. Although it was estimated that about 320,000 persons, or their estates, would be entitled to the lump sum payments provided under the old age insurance features which pay 3½ per cent. of the wages earned since Jan. 1, 1937, by an insured person who dies or reaches the age of 65, only about 27,000, or less than 10 per cent. of the expected number, made such claims by the end of September. Close to 20,000 of these claims were certified for payment by the same period. The balance in the old age reserve account in the United States treasury amounted to $766,899,001.85 as on Sept. 30.

By Sept. 1937, 39 measures for dependent children were approved by the Social Security Board. These systems provided assistance for 193,991 families, covering 481,734 children. The average payment per family in Sept. 1937 was $30.64, with the range in individual States from $10.39 in Arkansas to $57.42 in Massachusetts. Here also the ratio per population varied greatly in the different States. Whereas in South Carolina only two children out of every 1,000 under 15 years of age in the State were in receipt of benefits, the State of Maryland paid such benefits to 38 children out of every 1,000 under 16 years of age.

Plans for the assistance of the blind were approved by the Social Security Board in 35 jurisdictions by Sept. 1937. A total of 39,028 persons were in receipt of such help at an average of $25.87 per month. The variation here was also great. Individual average payments ranged from $9.06 in Arkansas to $47.74 in California. Also, as against one blind person per 100,000 total population receiving aid in the State of Kansas, 106 persons per every 100,000 population were receiving such aid in Pennsylvania.

Although in 1937 there developed a great deal of criticism against many of the provisions of the Social Security Act, no changes in the act were made by Congress during that year. The chief criticisms were centred around the old age insurance plan, especially the huge reserve system contemplated. The reserves were denounced as unnecessary because a social insurance programme, being radically different from a private insurance plan, does not require reserves. They were also attacked as financially unsound. The present reserve system was especially criticized as socially vicious, because the funds are derived almost exclusively from direct and indirect taxation on the wage and salary earners, which tends to decrease the purchasing power of the masses, thereby curtailing production, increasing unemployment, and enhancing insecurity. The inadequate benefits provided during the next generation under this system were also bitterly assailed. Official recognition of the criticism of the old age insurance plan came during May, when the United States Senate Finance Committee and the Federal Social Security Board appointed an Advisory Council, composed of 24 representatives of labour, employers, and the general public, to study the practicability and advisability of retarding the increases in the present taxes, of increasing and hastening the payment of benefits, and of either reducing or doing away with the reserve system. The Council began its studies late in 1937. (*See* also RELIEF; SOCIAL SERVICES.)

(A. Ep.)

SOCIAL SERVICES. More than £500 millions are spent annually in Great Britain on what are described as social services, but this total may be misleading, as it includes the cost of such services as unemployment insurance, housing, and poor relief. It is probable that what are usually regarded as charitable social services, such as the care of cripples, the deaf, the dumb, the blind, and the aged, cost more than £150 millions. The Board of Education keeps a strict control on the curricula and training of all special schools, whether maintained by public funds or by voluntary organizations dependent for their finances on public subscriptions. The Board's latest report shows that there were in mid-1937 71 schools of various types for 4,585 blind children; 47 schools and training establishments for 4,544 deaf children; 160 for 16,542 mentally defective children; and 612 for 58,369 physically defectives, including cripples. Training in these schools usually ceases at the age of 16, but there has been a consistent development of institutions for the training and employment of the blind after leaving school, and in most cases these institutes are helped financially by local authorities. Blind persons are entitled to an old-age pension at the age of 50, but it is planned to reduce this age to 40 within the next year, because of the difficulty of training. At the end of 1937, there were 69,378 blind persons in England and Wales; about 26,000 are in receipt of old-age pensions at a cost to the State of £650,000 annually.

One of the most rapidly developing social services in Britain is the provision of open spaces and playing fields

London County Council]

LONDON COUNTY COUNCIL PLAYING FIELDS ON HACKNEY MARSHES in and around crowded areas. Loans amounting to £3,196,002 were sanctioned by the Ministry of Health in 1936–37 for public parks, recreation grounds, and playing fields, including £1,952,270 for the purchase of land. The corresponding figures for 1935–36 were £2,467,245 and £1,109,889. The area purchased in 1936–37 was 9,059 acres; in 1935–36 4,732 acres. In addition, 3,570 acres were acquired under the Local Government Acts for the benefit, improvement, and development of towns at a cost of £736,096. More than 500 acres were presented during the year to local authorities for the National Playing Fields Association. Further progress has been made with the reservation of recreation areas, and a 'Green Belt' around London. The London County Council, under its scheme for assisting other councils purchasing land for this purpose, has approved areas amounting to approximately 35,000 acres, and made provisional offers of assistance amounting to nearly £2 millions.

State and municipal aid have been given to housing. The number of houses built since the Armistice up to March 31, 1937, was 3,328,398, of which 932,824 were built by local authorities, 423,723 by private enterprise with State assistance, and 1,971,851 by private enterprise without assistance. The total figure of houses built since the War represents the rehousing of roughly one-third of the population of England and Wales. In both slum clearance and overcrowding, the local authorities have been helped by voluntary housing associations, who receive Exchequer subsidies. Thirty-three housing associations have been responsible for the building of 3,695 houses, mainly in the Greater London area.

United States.—The outstanding events of the year 1937 in the field of social service were connected with the implementing of the Public Assistance and Social Insurance provisions of the Federal Social Security Act and the further development of the rapidly growing public social services in the various States. During the late autumn and early winter, the increase in the number of unemployed created a grave situation, particularly in the urban industrial centres. The needs of the unemployed and of the so-called 'unemployables' on relief were probably met less adequately than in any year since 1932. In place of the old Federal Emergency Relief Administration, with its large funds for grants to the States for direct relief and work relief, Federal aid for relief was provided only through the Works Progress Administration. This work programme, however, did not provide for all of the employable men and women certified by the relief authorities as 'in need', and the care of the remaining 'employables', in addition to the so-called 'unemployables', was left to the States and minor local authorities. Since many of these local governments were unable, and some of them unwilling, to carry this burden adequately, there was a sharp reversion in many areas to the conditions that existed in 1932–33, and an increasing demand that the Federal Government must not only support the work programme, but that a Federal grant-in-aid for direct home assistance must also be provided.

The relief situation was mitigated by the removal of a large number of families and individuals under the three important public assistance services under the Social Security Act. Steady progress was made during the year in the adoption of the Federal programme by the different States. The Federal, local, and State Governments together provided during the first 10 months of the year 1937 approximately $250 millions for old-age pensions, $48 millions for aid to dependent children, and $8,700,000 for blind pensions, or, in 10 months, a total of $306 millions for these three forms of public assistance.

During the year, there was also further progress in the adoption by the States of three other important services provided under the Social Security Act, but administered by the United States Children's Bureau, which was granted $1,500,000 to assist the States in setting up proper child welfare services; $2,800,000 to assist the States with grants for the care of crippled children, and $3,800,000 for State grants for maternity and infant care. The new Federal Social Security programme also made available $8 millions for additional services by the United States Health Service.

In 18 different States, statutes were passed providing for some reorganization of the State welfare departments; and, in addition, various other States provided for some changes in the methods of administration of the welfare programme. In New York, some important legislation of the preceding year was in process of being implemented, and on July 1, 1937, the Temporary Relief Administration, which had been in charge of New York State relief funds since Sept. 1931, ceased to exist as an independent administrative organization and was merged with the New York Department of Social Welfare.

Other important results of 1937 legislature in the field of social service include the new Michigan State Department of Public Assistance, the Missouri State Social Security Commission, and, most important of all, the reorganization of the public welfare services in the State of Washington, in which a central State authority was given charge of the whole social service programme, including unemployment insurance, the employment service, public assistance (relief), as well as the traditional welfare services, such as old-age pensions, blind pensions, and the child welfare services including aid to dependent children (mothers' pensions). In the State of Pennsylvania, the old poor boards representing the old type of 'pauper' relief administration, were abolished by statute and a new State Department of Public Assistance created. (*See* also SOCIAL SECURITY.)

SOCIETIES, LEARNED.

One of the most impressive features of the reports of learned societies throughout the world in 1937 was the expression of increased awareness of and regard for the impacts of scientific discovery on the welfare of the community.

Britain.—*British Medical Association.*—The 105th annual meeting was held in Belfast in July 1937, under the presidency of Prof. R. J. Johnstone, whose address dealt with 'Some thoughts on medical education'. During the year the Council considered many matters relating to medical practice and the interests of individual members. In connexion with the latter, steps were taken to urge committees of management of voluntary hospitals 'to recognize the claim of visiting medical staffs to some share in the moneys raised for the treatment of patients other than those provided by voluntary subscription or donation'. A parliamentary agent was engaged to examine all bills and report on any proposals likely to affect the interests of the medical profession. A Scottish branch of the British Medical Bureau was opened in Edinburgh. The 5th Australian Medical Conference was held at Adelaide in August, and the 10th annual meeting of the South African branch at Bloemfontein in September.

Chemical Society.—In addition to the ordinary scientific meetings and foundation lectures, several discussions were arranged on subjects of current chemical interest, the last one dealing with the influence of structure on parasiticidal drugs. It was announced in June that in future all papers published in the *Journal* will be prefaced by a short summary of the objects of the work, the results obtained, and their bearing on chemical knowledge. In July, an agreement was entered into whereby, to avoid overlapping, *Physiological Abstracts* will be incorporated with British *Chemical Abstracts A* as from the beginning of 1938.

Institute of Chemistry.—The membership roll has increased by over 200 to nearly 7,000. Local sections, of which there are over 20 in Great Britain and the Dominions, have been busy, and many valuable papers have been read and published in the *Journal.* Lectures published from headquarters include ' Gas-defence from the point of view of the chemist' and 'Chemical changes and chances'. Among matters to which the Council has directed special attention are teaching of general science in schools and a means whereby a form of voluntary registration for qualified chemists (other than pharmacists) may be effected. The Institute completed its 60th year.

Institute of Physics.—The 2nd conference on industrial physics was held in Birmingham University in March, the subject being 'Optical devices in research and industry'. There was an exhibition of instruments and apparatus. Various branch meetings were held, and a symposium by the Manchester branch on magnetism was published in book form. The Institute has been in touch with the postmaster-general concerning proposed legislation regarding electrical interference with broadcasting. Arrangements have been made for placing students registered with the Institute in industrial laboratories in order to give them first-hand experience of physics in industry.

Royal Geographical Society.—There was a marked increase in the strength of the society. Of expeditions in which the society is interested several completed their work. The British Grahamland Expedition (leader John Rymill) returned after 2½ years in the Antarctic ; Mr. R. Kaulback completed a valuable survey of the Salween valley and surrounding areas in S.E. Tibet ; Consul Lars Christensen discovered new land and new mountain ranges in the Antarctic ; Chomolhari was climbed in May by F. S. Chapman, and other mountaineering expeditions were completed, notably that by F. S. Smythe, who made valuable plant collections in the Himalayas. The Society completed a map of the Karakorum which has had the approval of the surveyor-general of India. Many lectures were delivered during the year, and the use of the instruction room by intending travellers continues to grow.

Royal Institution.—The lecture programme was varied in character, and afternoon courses and evening discourses by the professors of the Institution and others on scientific subjects, literature, history, and music, included a number of experimental lectures. The year was completed with a course of juvenile lectures on 'Rare animals', by Dr. J. S. Huxley. The general programme of the Davy Faraday Research Laboratory (Director, Sir Wm. Bragg) dealt mainly with the connexion between the physical properties of organic substances and their structure and with structure determination of organic crystals by aid of X-rays. Work was started on the application of short electric waves to the study of organic solids and the extension of optical investigations towards the infra-red.

Royal Society.—The Society completed 275 years of existence. It was decided that 20 Fellows will be elected annually in future instead of 17. The total expenditure authorized for research was £33,500. The Council arranged, through the Development Commissioners, for a grant of £5,100 for capital expenditure and £3,500 a year for five years to cover the cost of intensive study of the Gulf Stream and Atlantic Drift which are thought to affect fisheries of the United Kingdom. The Pilgrim Trust offered 250 guineas annually for six years to allow an annual lecture, to be arranged jointly by the Royal Society and the National Academy of Sciences, to be given alternately in London and Washington. On Nov. 30, Sir Wm. Bragg read his presidential address on 'The grain-like structure of solids'. Medals were awarded as follows: *Royal,* Prof. N. V. Sidgwick, Prof. A. H. R. Buller. *Copley,* Sir Henry Dale. *Davy,* Prof. Hans Fischer. *Sylvester,* Prof. A. E. H. Love. *Hughes,* Prof. E. O. Lawrence.

Royal Society of Arts.—At ordinary meetings and in the Indian and Dominion sections, nearly 50 lectures were delivered on a wide range of subjects, several of which gave publicity to important developments in art, industry, and commerce. The Society instituted a distinction to be known as Designer for Industry of the Royal Society of Arts, designated by the letters R.D.I. Eleven designers have been granted the honour, which is highly valued and has enhanced the status of industrial art. Commercial examinations were held three times during the year in 600 centres in Great Britain and Ireland, 90,560 papers being worked. The Albert Medal was awarded to Lord Nuffield 'for services to industry, transport, and medical science'. (*See* also BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.)

Canada.—*Royal Society.* The annual meeting was held at the University, Toronto, May 25–28, under the presidency of Mr. Laurence J. Burpee, whose presidential address dealt with 'The discovery of Canada'. One hundred and seventy-eight papers were read before the Society, which met in three sections.

France.—*L'Association Française pour l'Avancement des Sciences.* For the first time in the history of the Association, two meetings were held, both in Paris, an arrangement made necessary by the cancellation of the original opening date of the international exhibition. The first meeting was held May 18–22 and the second July 24–27, both under the presidency of Prof. Maurain. After the second meeting, a party of 60 members made a five-day excursion to England.

La Société Astronomique celebrated its jubilee on June 16, when a reception, attended by 3,000 people, including astronomers from all over the world, was held in the Sorbonne. Opportunity was taken for a discussion on the problems of interstellar matter in space.

La Société de Chimie Industrielle held its 17th Congress in Paris, Sept. 26–Oct. 3, 250 foreign delegates being present. The president, Sir Robert Mond, gave an address on 'The evolution of the nickel industry'.

Germany.—The *National Congress of German Chemists* was held in Frankfurt-on-Main concurrently with *Achema VIII,* an exhibition devoted to chemical technology (July 2–11). Early in the year, an *Institute of Psychological Research and Psychotherapy* was founded.

India.—*Indian Science Congress Association.* The 24th session was held in Hyderabad (Jan. 2–8), president, Rao Bahadur T. S. Venkatraman. Throughout the year, elaborate preparations were made for the Silver Jubilee meeting in Calcutta (Jan. 3–9, 1938) under the presidency of Sir James Jeans. Over 100 delegates from the British Association and foreign institutions were met at Bombay on Dec. 16 and conducted on a tour of northern India prior to the meeting.

Italy.—*The Pontifical Academy* (*Pontificia Academia delle Scienze*), reconstituted in 1936 by Pius XI, published a first annual report (1936–37) which has brought the Academy into prominence once more after a chequered history of 333 years.

New Zealand.—*The Australasian Association for the Advancement of Science* met at Auckland, Jan. 12–19. The meeting was well attended. The Association has instituted an Australian National Research Council, and it is hoped to found a periodical for the dissemination of scientific knowledge to the lay public.

Reports from the various societies and research institutes indicate a systematic attack on problems of nutrition, health, and soil surveys.

Russia.—*Academy of Sciences, Moscow.* Under the presidency of Prof. V. L. Komarov, the eminent botanist, the Academy, hitherto concerned chiefly with technical and engineering problems associated with the socialist reconstruction of the country, showed an increased interest in biological researches during the year. Work was started on new Botanical Gardens on the slopes of the Lenin Hills, on the outskirts of Moscow. The design and construction of the gardens (which will occupy an area of 825 acres) are in the hands of a special commission of the Academy. An invitation has been extended to hold the next International Conference on Genetics in Moscow in 1939 under the aegis of the Academy.

Serbia.—*The Royal Academy of Science* has completed 50 years of existence.

South Africa.—*The South African Association for the Advancement of Science* met at Windhoek (July 5–12). The presidential address, by Lieut.-Col. C. G. Botha, dealt with ‘ The science of archives in South Africa ’.

Switzerland.—*The Physical Society of Zurich* celebrated its 50th anniversary (Jan. 13–16) by holding a meeting to discuss ‘ The solid state ’, to which foreign delegates contributed.

The Swiss Society of Natural Sciences continued to work through its Commissions, and progress was made with the geological survey of the country on the scales of 1 : 25,000 and 1 : 200,000.

United States of America.—*American Association for the Advancement of Science.* The 99th meeting was held in Atlantic City, N.J. (December–January), under the presidency of Dr. Karl T. Compton, who delivered an address on ‘ The electron : its intellectual and social significance ’. The attendance was 2,400. The prize for the most outstanding contribution to science was awarded to Dr. W. M. Stanley for a paper on ‘ Crystalline tobacco-mosaic virus protein ’. The 100th meeting was held at Denver, Colorado, June 21–26, the president, Dr. Geo. Birkhoff, being represented by ex-president Dr. E. G. Conklin. This centenary meeting was unique, in that the Association met for the first time in joint session with the Pacific and N.W. Divisions, who provided two general evening sessions and, with their 12 co-operating societies, contributed greatly to the success of the meeting. Two outstanding items in the programme were a symposium on ‘ Scientific aspects of the control of drifting soils ’ and a display of films prepared by Chicago University. Forrest R. Moulton succeeded Henry B. Ward as permanent secretary. The 101st meeting was held in Indianapolis, Dec. 27–Jan. 1.

American Medical Association.—The annual meeting was held in Atlantic City, N.J., the most outstanding topic being a report on prontosil, a new chemical remedy which has saved thousands of lives and gives promise of conquering four of mankind's chief enemies, streptococci, pneumococci, meningococci, and gonococci. Many years of firm opposition were terminated by the adoption of a committee report recommending investigation of methods and materials for contraception and teaching of birth-control procedure in medical schools.

Carnegie Institute of Washington.—In the work of the Institute, due emphasis was laid on the relationship between science and human welfare, and endeavours were made to secure the practical applications of research. Astronomical research work at the Mount Wilson Observatory has reached a stage where data permit the formation of new patterns with new theories and new points of view ; the Geophysical Laboratory has been investigating the equilibrium between crystalline minerals and their melts ; important seismological work was carried out at Pasadena, and the Division of Plant Biology was responsible for intensive studies in plant physiology.

Chemical Society.—The 94th meeting was held in Rochester, N.Y. (Sept. 6–10) under the chairmanship of Mr. M. H. Eisenhart. Seventeen divisions took part in the programme, which included 23 symposia on all branches of chemistry. The presidential address was delivered by Dr. E. R. Weidlein. One of the major topics was the chemistry of milk and other foods and their importance in health. The 14th Colloid Symposium was held in the University of Minnesota in July. The Society co-operated with other organizations from Oct. 6 to Nov. 4 in celebrating the birth of Dr. Charles F. Chandler, ‘ the father of modern industrial chemistry ’.

Mellon Institute.—The new building of the Institute, which has taken six years to complete, was dedicated, May 5–9, ‘ to Science and Humanity ’, and on the occasion a symposium was held on ‘ Recent progress in Science ’, to which some of the most prominent American scientists contributed.

Museum of Natural History.—One of the most outstanding expeditions of the year was that organized by the Museum to study the biology of Shiva's Temple in Grand Canyon. Led by Dr. Harold E. Anthony, the expedition was established on Shiva's Temple on Sept. 16. Though biologists were disappointed that this long-isolated area did not yield up unknown species, an interesting collection was brought back to the Museum.

National Academy of Sciences.—The spring meeting was held in Washington when papers were read on a wide variety of subjects, one of the most spectacular being a report by Dr. Oscar Schotte, who explained how he had induced the growth of a head on the tail of a tadpole. Fifteen new Fellows were elected, of whom 10 represented biological sciences. The autumn meeting was held in Rochester, N.Y., in October, when cancer was an important topic of discussion. Prof. E. O. Lawrence described an improved cyclotron for atom-smashing, and Dr. E. S. Nassett reported a new hormone, *enterocrinin*, which aids digestion.

Philadelphia Academy of Natural Sciences.—In celebration of the 125th anniversary of the Academy, an international symposium on ‘ Early Man ’ was held in March. The introductory address was given by John C. Merriam and 32 communications were read, dealing with American, European, and Asian cultures. The year was marked by a strengthening of the scientific work of the Academy, by the inauguration of an education department, and by the re-establishment of departments of geology and palaeontology.

The following international congresses were held during the year :

January.	London.	International Faculty of Sciences.
April.	London.	Council of Scientific Unions.
June.	The Hague.	Agriculture (17th).
July.	Aberystwyth.	Grassland (4th).
,,	Edinburgh.	European Ethnology and Folk-lore.
,,	Moscow.	Geology (17th).
,,	Paris.	Acoustics (1st).
September.	Bucharest.	Anthropology and Archaeology.
,,	Le Malon.	Cosmobiology (2nd).
,,	Prague.	History of Science (4th).
,,	Chicago.	Radiology (5th).
October.	Copenhagen.	Psychotherapy (9th).

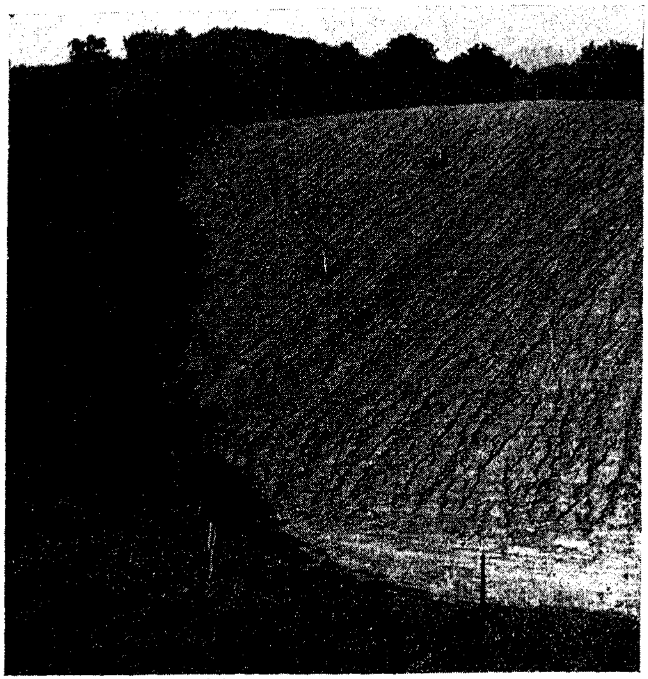
The 7th International Congress on Genetics, due to be held in Moscow in the summer, was cancelled. (D. N. L.)

SOIL EROSION AND SOIL CONSERVATION.

Soil conservation and the prevention of erosion is becoming a matter of public concern in many countries of the world. Although scientists had been studying the matter of soil deterioration for many years, and admonishing their countrymen against the day when it would be too late to take remedial action, scant attention was given to the warning by people generally while land was plentiful and expansion seemed unlimited. Then, too, because of well-distributed rainfall, infrequency of torrential rains, and careful husbandry, soil erosion is not now, and never has been, a critical problem in western Europe, until recently the seat of leadership in agricultural science, except in parts of Italy and Spain, and a few other localities such as those lands in the valley of the Rhine used for crops under the protection of walled terraces.

Public consciousness in the more spectacular phase of the problem, soil erosion, began to awaken in the United States, Canada, Australia, and elsewhere about 1925. In America, the recent dust storms associated with the unprecedented drought in the American plains along with severe floods in the Ohio and Mississippi basins, served to bring the associated problems of rural land-use and flood control into still sharper focus during the past three years. Outside Britain itself, erosion is more or less a problem throughout the British Empire, varying in kind and degree. In Australia, wind does the greatest damage, while in northern India water erosion is serious. In many of the individual States, special governmental committees have been appointed for dealing with the problem through reforestation, controlled grazing, fire protection, and especially through emphasis on good husbandry.

In the United States during 1937, soil erosion, on the whole, has probably been less severe than in the previous few years, due to better distribution of rainfall in both humid and semi-arid regions, and to important public measures taken to improve agricultural practices and prevent erosion. In the Soviet Union, the problem is receiving much more attention than formerly, but no comprehensive reports are available as to its relative seriousness and extent. Reports from South Africa, East Africa, Ceylon, northern India, and some other areas leave the impression that the problem is becoming increasingly serious. In these countries a growing population, coupled with increased pressure for crop production without a corresponding improvement in husbandry, is leading to increased erosion. China has already suffered from this sequence of circumstances, especially in the northern loessial areas.



U.S. Soil Conservation Service]

NEARLY 500 TONS OF TOPSOIL PER ACRE WERE WASHED FROM THIS HILL-SIDE WALNUT ORCHARD BY A SINGLE STORM; WHERE THE VEGETATIVE COVER HAD BEEN PRESERVED (LEFT) LITTLE LOSS OCCURRED

Conservation.—Because of its great importance in the United States, the control of soil erosion has recently received considerable practical attention. The Department of Agriculture has greatly increased its efforts in calling the attention of its citizens to the problem, in conducting demonstrations on a small watershed basis in several parts of the country, and in developing a system of subsidies for those farmers practising good husbandry. One additional Federal agency, the Tennessee Valley Authority, is making a co-ordinated attack on the whole problem of water and land conservation in a great watershed.

In Basutoland, where soil erosion has reduced large tracts of territory to desert conditions, a 10-year plan to deal with the problem has been in force for some three years past. Serious erosion in Nyasaland, due originally to the destruction of forest cover through the custom of burning forests at various periods, led the Government, following investigation of the steps being taken in the United States, to intensive effort to safeguard the future in respect of the northern part of the territory. Useful work in checking erosion also is being done by European planters of tea and tobacco by the establishment of a series of contour bonds on the plantations to check the flow of friable soil in the rainy season. In Tanganyika regulations for the control of erosion have been adopted; but in some districts of Central Tanganyika the trouble is so far advanced that the cost of reclamation would be prohibitive, and the only possible solution of the problem is redistribution of the population to new areas. Serious conditions obtaining in certain reserves in Kenya are being made the subject of careful survey.

The most significant trend in dealing with the problem is the development of techniques for co-operation, first among the people on the land, and then between these people and the research and administrative agencies of the State dealing with the land. Since many of the fundamental causes of soil deterioration are due to economic and social conditions, the solution of the problem calls for economic adjustments as much as for physical improvements in husbandry. Soil erosion is an evidence, rather than a cause, of a lack of adjustment between the people and the land. In many instances farmers and ranchers cannot improve their practices without help, and especially without the incentive associated with security of tenure.

During the years since the World War, a good deal of useful legislation has been enacted in several countries in order to enable farmers to adopt better practices and to safeguard the State's interest in the land and its productivity. Some of this legislation is definitely experimental, and different countries, having different soils and unique problems, will need special laws. Much more can be done. Some people in the countries where erosion is serious feel that compulsory measures may be necessary to force occupiers of the land to protect it. On the whole, however, it is felt that the erosion problem needs more clarification through research before detailed regulation is attempted. These trends are emphasized in reports from all parts of the world.

BIBLIOGRAPHY.—Reports of the Imperial Bureau of Soil Science, Harpenden, England; 1938 *Yearbook of the United States Department of Agriculture* (in preparation), Charles E. Kellogg, Ph.D., Principal Soil Scientist and Chief, Soil Survey Division, U.S. Department of Agriculture, author of *Development and Significance of the Great Soil Groups of the United States, Soil Survey Manual,* etc. (*See* also RECLAMATION.) (C. E. K.)

SOKOTRA : *see* ADEN.

SOMALILAND, BRITISH. A British protectorate in east Africa, bounded N. by the Gulf of Aden, and marching with Italian Somaliland, Ethiopia, and French Somaliland. The governor is Major Sir A. S. Lawrence, K.B.E., C.M.G., D.S.O.; and the capital is Berbera, the governor's seat being at Sheikh. The area is *c.* 68,000sq.m., and the population *c.* 344,700, of whom (1931 census) 68 were Europeans. The religion is Mohammedan. The Somalis have in the past opposed secular education. Small grants have been made to Koranic schools, and there is one government elementary school in Berbera.

On Jan. 27, 1937, an agreement was signed in Rome between Great Britain and Italy settling various matters affecting the interests of the two countries in their respective areas in Somaliland, including the organization of transit traffic and tribal grazing and watering rights in Italian territory.

There is a weekly steamer service from Aden. There are no railways, and the 2,000 miles of roads are liable to become impassable in certain seasons. There is a telegraph system, and 5 wireless stations. In 1936, 1,301,419 hides and skins of sheep and goats were exported, and 11,938 cwt. of gum and resin. Total exports for 1936 were Rs.2,605,596, and imports Rs.5,669,801. Banking business is conducted through an Aden branch of Messrs. Cowasjee Dinshaw Bros., and the currency is the Indian rupee. Revenue and expenditure for 1936 were £164,536 and £207,190 respectively.

SOMALILAND, FRENCH, is a French colony on the east coast of Africa, lying between Eritrea and British Somaliland. Area *c.* 8,490sq.m.; population *c.* 70,000, including 700 Europeans. Capital, Jibuti. The railway from Jibuti to Addis Ababa has increased considerably in importance as the result of the Italian annexation of Abyssinia, for the Italian troops have largely depended for their existence upon transport on this line. A provisional agreement was reached between the French railway company and the Italian Administration on the subject of transport tariffs. Definite agreements cannot be concluded until after the recognition by France of the new status of Italian East Africa. The Italians are trying to find other methods of penetration, whether by road or by rail; but Jibuti remains the natural outlet for Abyssinia, and its importance continues to increase.

SOMALILAND, ITALIAN, a coastal strip of north-east Africa, on the Gulf of Aden (N.) and the Indian Ocean (E.), backed by British Somaliland, Ethiopia, and Kenya, and now forming part of Italian East Africa (*q.v.*): area, about 195,800sq.m.; population (1931) 1,021,570, including 1,670 Europeans. Mogadiscio is the capital and seat of the governor.

The chief products are oil, gum, hides, kapok, sugar, cotton, and ivory, and the colony is the source of half the world's supply of incense; bananas and maize are also grown. In 1934, imports amounted to 59,190,960 lire and exports to 30,290,390; in 1935–36 the budget balanced at 70,750,000 lire.

Colonization is greatly hampered by lack of transport and scarcity of water and labour. A severe drought in 1937, followed by a plague of locusts, added to existing difficulties caused by the Italian occupation of Ethiopia, brought about a shortage of food, clothing, and other supplies (especially among the natives), and caused a serious rise in prices.

SOMERVELL, SIR ARTHUR, British musical composer; born at Windermere, June 5, 1863; died May 2, 1937. He was educated at Uppingham, and at King's College, Cambridge, where he took his Mus.D. in 1904. From 1894 to 1901 he taught at the Royal College of Music, and afterwards became an inspector, and ultimately chief inspector, of music to the Board of Education. He was knighted in 1929. In 1890 he married Edith Collet, and he had two sons and two daughters. He was known chiefly for his songs, and notably for settings of lyrics from *Maud* and *The Shropshire Lad*; but his cantata, *The Forsaken Merman,* and his symphony in D minor, *Thalassa,* are among his more ambitious works which hold the attention of music-lovers.

SOUTH AFRICA, THE UNION OF. This self-governing Dominion of the British Commonwealth of Nations extends from the southernmost point of the African continent to the course of the Limpopo, with the exception of the territories of Basutoland, Swaziland, and Bechuanaland, which remain under direct administration of Great Britain. The former German colony of South West Africa (*q.v.*) is administered by the Union under League of Nations mandate. There are in effect two capitals: the seat of government being at Pretoria, and that of the legislature at Capetown. The ruler is King George VI, represented by a Governor-General, Sir Patrick Duncan (*q.v.*). The national flag is orange, white, and blue in horizontal stripes, the white stripe having in its centre the Union Jack and the flags of the Transvaal and the Orange Free State.

Area and Population.—The combined area of the four provinces of the Union (Cape of Good Hope, Natal, Transvaal, and Orange Free State), including Walvis Bay, which is administered by South West Africa, is 472,550sq.m. The population is 9,588,665 (1936 census), made up of 2,003,512 Europeans, 6,597,241 Bantu, 219,928 Asiatics, and 767,984 coloured folk. The Dutch Reformed Churches can claim 49·61 per cent. of the European and 5 per cent. of the Bantu population; Anglicans, 18·57 per cent. Europeans and 8·77 per cent. Bantu; Presbyterians, 4·74 per cent. Europeans and 2 per cent. Bantu; Methodists, 6·28 per cent. Europeans and 13·5 per cent. Bantu; and 4·28 per cent. of the Europeans are Jews.

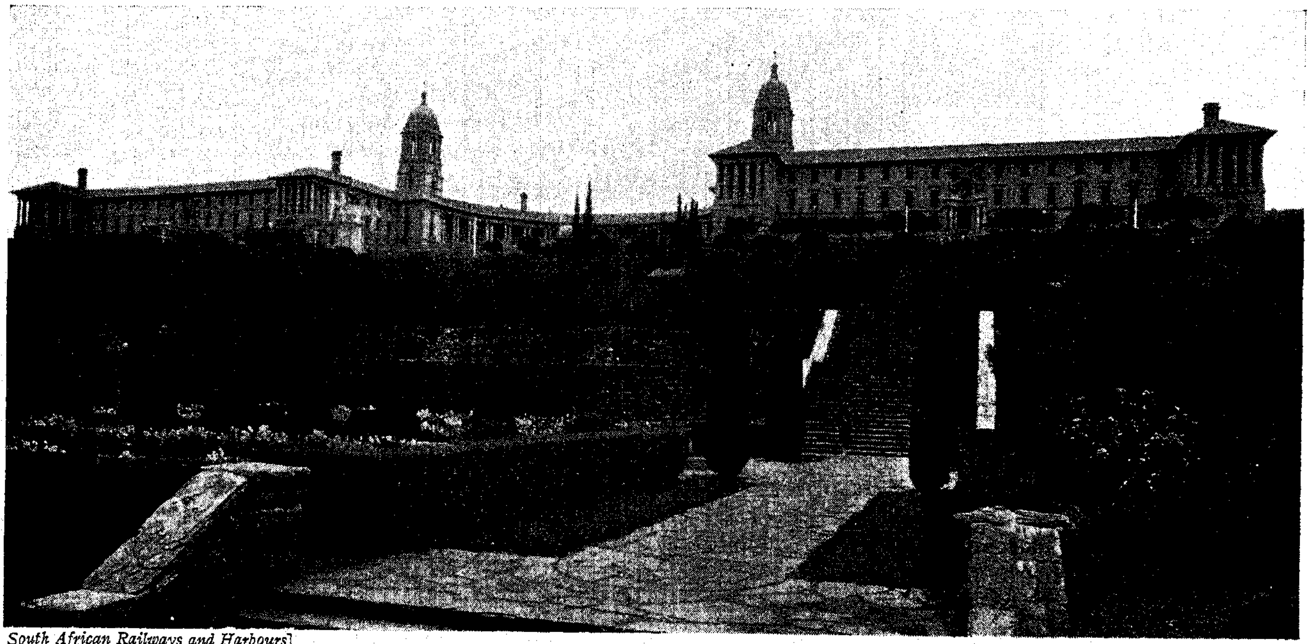
South Africa is officially bi-lingual, all important papers being printed in both Afrikaans and English, and both languages being taught in the schools. The most important of the native languages are Seyosa, Zulu, Sesuto, and Sechuana. Primary education is under the control of the provincial administrations (*see* under respective headings), and is free and compulsory for Europeans. There are the following universities and university colleges: the University of South Africa, with constituent colleges at Potchefstroom, Bloemfontein, Grahamstown, Wellington, and Pietermaritzburg; and the Universities of Capetown, Stellenbosch, Witwatersrand, and Pretoria. There is also a number of State technical and agricultural colleges. Education for Bantu is entirely supplied by State-aided missions. Higher education is the direct concern of the Union Department of Education. Fort Har, the native university college, prepares students for the degrees of the University of South Africa, on whose senate it is represented.

The leading cities, with 1936 population figures, are: Johannesburg, 519,268; Capetown, 335,371; Durban, 259,647; Pretoria, 128,636; and Port Elizabeth, 109,824.

History.—Sir Patrick Duncan, successor to the Earl of Clarendon as governor-general, assumed office on April 5, 1937. A bill to abolish appeals to the Privy Council, promoted by the Nationalist Party, was defeated in Jan. Three by-elections took place during the year, at Yeoville, Vrededorp, and Klerksdorp, but no change in party representation occurred, the first and third being won by the United Party, the second by the Nationalists. In June the first purely native elections took place in the Cape province, three new and additional members (one a woman) being elected to the House of Assembly to represent the native voters under the provisions of the new Native Representation Act. The Natives Representation Council, an advisory body which is to consider all proposed native legislation and all estimates of income and expenditure affecting natives before they are placed before the Union Parliament, composed of 15 elected members, with the five chief Native Commissioners and the Secretary for Native Affairs, met for the first time in December. The defence plans of the Union received much attention during 1937; the year witnessed the inauguration of a scheme to train 1,000 air pilots in five years, and in Feb. it was announced that 100 military aeroplanes were to be supplied to the Union by the British Government. The Union Government signed a contract with Imperial Chemical Industries, Ltd., to build a factory at Pretoria capable of supplying ten million rounds of ammunition annually, and a scheme for making the Union self-sufficient regarding armament supplies was examined. A national physical training scheme, with three to four hundred trained instructors, is under consideration. The proposal to transfer to the Union the native protectorates of Basutoland, Bechuanaland, and Swaziland came to the front after Gen. Hertzog's visit to England for the Coronation: after suggesting that Britain was neglecting the Union's rights, it was realized that there had been a misunderstanding with the Home Government, and in Oct. Gen. Hertzog announced that he had recently received a communication from the British government bearing out his view that the transfer would shortly be effected. On July 1, on the inauguration of the new Imperial Airways flying-boat mail service from Southampton to Durban, the Union government started a new air mail system intended to carry all inland letter mails by air as far as possible, and including a daily service from Johannesburg to Capetown.

Trade and Communications.—The most important agricultural exports are maize, citrus and soft fruits, hides and skins, wool, and mohair. Wool exports for 1937 showed an increase in value of about £3 millions over the figures for 1936; fruit exports also rose, amounting to *c.* £4 millions; and maize was exported to the value of £3 millions, compared with £60,000 in 1936. Gold is the most important product; and the total production in the Transvaal for 1937 was 11,740,891oz., compared with 11,336,214oz. in 1936.

The production of diamonds in 1936 was, in carats, 339,718 (mined) and 284,204 (alluvial). The total value in sterling of imports and exports during 1936 is shown as follows:



South African Railways and Harbours]

THE UNION BUILDINGS, PRETORIA

Imports		*Exports*	
Merchandise.	£81,099,318	Produce ..	£109,497,485
Government.	5,182,748	Re-exported ..	1,888,241
Specie ..	22,018	Through Post.	134,769
		Ships Stores—	
	£86,304,084	produce ..	1,188,730
		Re-exported..	179,889
		Specie ..	1,645,002
			£114,534,116

For the first six months of 1937, imports were £49,115,515 and exports £58,785,040, as compared with £40,902,745 and £59,235,247 for the corresponding period of 1936. Estimated 1937 figures for total imports and exports are £103,000,000 and £125,000,000 respectively.

The railways are owned and managed by the South African Government. They are efficient, and there are few areas which they do not touch. Many of the gradients are astonishing. There are some electrified lines, particularly in the suburbs of Capetown and Johannesburg and on the heavy gradients of central Natal, and extension of electrification is contemplated. At the end of March 1937 there were 13,213m. of railway, of which 884m. were 2ft. gauge, and the remainder 3ft. 6in. There is through communication from Capetown to Port Francqui in the Congo. Main roads are well maintained and of good surface, but local roads are rough and often impassable at certain seasons.

On April 1, 1936, South African Airways took over the services south of Germiston formerly operated by Imperial Airways; and in June and July 1937, coincidentally with the introduction of an Imperial Airways flying-boat service terminating at Durban, South African Airways took over the route from Germiston to Lusaka and finally to Kisumu, on Lake Victoria. There are also six local routes operated by South African airways: Rand-Durban daily, Durban-Capetown twice weekly, Rand-Capetown via Kimberley twice weekly, Rand-Port Elizabeth via Bloemfontein weekly, Rand-Windhoek via Kimberley twice weekly, and Rand-Kisumu weekly. There are also regular air mails to Australia and the Far East.

Telephone communication is possible between all the large centres, and further extension of long-distance lines is being considered. Farm lines are increasing, and in 1936, 15,714 farmers were served. There were altogether 1,449 exchanges in 1936.

Finance and Banking.—The Union mints its own currency, which is identical in denomination and value with that of the United Kingdom. Revenue and expenditure estimates for the financial year 1937–38 are £42,550,000 and £37,550,000 respectively. The income tax for individuals is graduated from 1*s.* to 2*s.* in the £; for gold-mining companies it is 3*s.* in the £, and for other companies 2*s.* 6*d.* There is a poll-tax on natives at a rate of £1 a head, and in addition a local tax of 10*s.* per hut up to £2 on all owners of huts in native Reserves.

The most important of the banks are the Government Reserve Bank, the Standard Bank of South Africa, and Barclays Bank (Dominions, Colonial & Overseas).

Defence.—The Union Government is entirely responsible for the land defences of its territory. Every citizen is liable to a period of military training between the ages of seventeen and twenty-five, and a minimum of 50 per cent. of those of age are called upon. The Union Defence Force is a permanent force consisting of seven military commands under a Council of Defence. There is also a Military College. The South African Air Force is of considerable strength, with two bases at Roberts Heights near Pretoria, and at Capetown. A new system of training pupil-pilots for inclusion in the Defence Force Reserve of Pilots has lately been instituted. Pupils do non-continuous training at private aerodromes or clubs and continuous training at the training school at Roberts Heights. A small subsidy is paid by the Government towards the training of such pilots. The naval defences of the Union are the responsibility of the British Navy, which maintains a station and dockyards at Simon's Town in the Cape Province. There is also a South African Division of the Royal Naval Reserve, which embraces citizens liable for service who elect to perform naval service. The Citizen Force Reserve consists of citizens who have performed their peace training. Union expenditure on defence in 1936 was £1,155,198.

BIBLIOGRAPHY.—E. A. Walker, *History of South Africa*, new edition, 1935; *Smuts*, By Sarah Gertrude Millin, 1936; *Africa Emergent*, W. M. Macmillan, 1938; *The Cambridge History of the British Empire*, Vol. VIII. (W. M. MA.)

SOUTH AFRICAN LITERATURE. English.—The output in 1937 was mainly historical. Prof. Hattersley continued his researches into the history of Natal, and published *More Annals of Natal*, important, among other things, for the light it throws on the Voortrekkers. Prof. E. A. Walker produced a valuable biography of W. P. Schreiner. The Travels and Adventures of Nathaniel Isaacs in eastern Africa were ably edited by Dr. L. Herrman, and with these volumes the Van Riebeeck Society reached its 17th publication. C. Birkby, in *Zulu Journey*, gave a readable, if superficial, account of native life. Lieut.-Colonel J. Stevenson-Hamilton looks back over 37 years in his book, *South African Eden*, to review his fight on behalf of the wild animals against civilized marauders and to trace the development of what is popularly known as the Game Reserve. In *Fortune my Foe*, Prof. J. P. R. Wallis gives the first complete biography of Charles John Andersson, discoverer of Ngamiland. H. C. Armstrong's *Grey Steel* is, as a biography of General Smuts, faulty on the historical side, and its subtitle, 'A study in arrogance', unmerited. Prof. Schapera edited valuable ethnographical studies in *The Bantu-speaking Tribes of South Africa*. Leipoldt, the versatile, has given an attractive account of his days as a medical inspector of schools in *Bushveld Doctor*. Poetry is meagrely represented by Lillian Smit's promising verses, *Windows Wide*.

Afrikaans.—Poetry, though less than usual, contains some interesting work. An anthology by Uys Krige, *Afrikaanse Versameling*, published in Holland, has created considerable interest in Europe. Two volumes by I. D. du Plessis go alternately in the direction of romance and of psychological analysis, and contain good work. N. P. van Wyk Louw followed up his earlier work in a sensitive volume, *Die Halwe Kring*. The rhymed version of the Psalms by 'Totius' was successfully completed. Periodicals and the year-book of the Afrikaans PEN-club (Skrywerskring) contain much meritorious verse.

The psychological tendency that appeared in verse is seen also in the novels. Of this type the most important is *Sy Kom met die Sekelmaan*, by Hettie Smit. Others are: *Fyn en Broos*, by S. Roux, and *Orion*, by 'Karin'. T. C. Pienaar deals with marriage difficulties, and the bearing on them of religious idealism, in *Verlate Vlahtes*. All these are women writers. D. F. Malherbe provides yet another Biblical story in *Die Profeet* (Jeremiah). The Hobson brothers, noted for their sympathetic books on animal life, tried their hand with less success at romance in *Geluksvlei*. Van Melle wrote of revolution in *Bart Nel*. The best novel of the year was C. M. v. d. Heever's *Kromburg*, which depicts the inevitable tragedy of an artistic temperament set in the smallness of village conventions. This author's *Somer* has been translated into German and into Flemish, and further requests for translations have come from Continental publishers. Dirk Mostert, in some sense the P. G. Wodehouse of Afrikaans, published *Moleste by die Moot.* E. Serfontein attempted the abnormal in *Sluipenda Honde.* Thrillers include the veteran Leipoldt's *Dwergvroutjie*, told with skill and charm.

There was a good deal of historical work. Dr. Dreyer continued his collection of documents relating to the Dutch Reformed Church, and Pretorius & Kruger have published documents relating to the Voortrekkers, 1829–49.

(T. J. H.)

SOUTH AUSTRALIA, a State of the Australian Commonwealth, 380,070 sq.m. in area, bounded by longitudes 129° E. and 141° E., and by latitude 26° S. and the southern coast of the continent.

The State Governor, representing H.M. King George VI, is Major-Gen. Sir Winston Duggan, K.C.M.G. Population (1937), 588,395, forming 8·6 per cent. of the population of Australia. Capital, Adelaide: population (1936), 316,878, including suburbs. The premier of a Liberal government is Mr. R. L. Butler.

History.—Parliament was opened by the Governor on July 27, 1937. Among the measures passed during the year was an amendment to the State constitution prolonging the term of parliaments from three to five years, and consequently providing for the election of members of the Legislative Council for 10 instead of 6 years. Other bills presented to parliament provided for the establishment of a Milk Marketing Board, the application of tests to new drivers before the issue of car-driving licences, and the ratification of an agreement between the Government and the Broken Hill Proprietary Co. for the construction of a large iron-works at Whyalla.

The Mount Bold reservoir, with a total capacity of 6,662 million gallons and a height of dam of 147ft., was completed during 1937. The Municipal Tramways Trust inaugurated an experimental system of trolley-buses. A betting commission was appointed with wide terms of reference; in 1936–37 the betting turnover in the State, apart from totalizator betting, was over £7 millions, of which only £1·7 millions was laid on the course.

Trade, Industry, and Finance.—Production in 1935–36 was valued (gross) as follows: agricultural, £11,431,418; pastoral, £5,442,737; dairying, etc., £2,688,560; forestry, fisheries, etc., £824,585; mining, £2,700,162; total, primary industry, £23,087,862 gross value, £15,147,080 net value; factory industry, £31,904,091 gross value, £11,669,705 net value. Livestock numbered (Dec. 31, 1936) 7,905,000 sheep, 328,000 cattle, 201,000 horses, and 86,000 pigs. The percentage of trade unionists unemployed in Aug. 1937 was 8·4, the number of registered unemployed in that month being 8,209. Corresponding figures for Aug. 1936 were 10·0 per cent. and 11,109.

Director of Australian Trade Publicity]

ADELAIDE, THE CAPITAL OF SOUTH AUSTRALIA. A VIEW OF KING WILLIAM STREET

The 1936–37 budget yielded a surplus of £139,168 instead of an estimated deficit of £168,452. Revenue was buoyant, but expenditure also increased. Income-tax was reduced by 3*d.* in the pound, at a cost of £225,000, and certain small family incomes were exempt from tax. The special grant from the Commonwealth had been reduced from £1,330,000 to £1,200,000 for 1937. Wage and salary increases would cost £225,000. On the other hand, considerable increases of revenue were expected from income-tax, railways, and other sources. Total revenue for 1937–38 was estimated at £12,248,632 (against £11,739,306 received in 1936–37), and total expenditure at £12,244,648 (against £11,600,138 in 1936–37). The loan works programme for 1937–38 totalled £2,800,000 gross, offset by credits of £1,500,000, being chiefly repayments of advances by the State Bank (for house-building, etc.) and by the Farmers' Assistance Board.

(H. V. H.)

SOUTH CAROLINA: *see* UNITED STATES OF AMERICA.

SOUTH DAKOTA: *see* UNITED STATES OF AMERICA.

SOUTH-WEST AFRICA, territory north of the Orange river, bounded on the west by the Atlantic, on the north by Angola, and on the east by the Bechuanaland Protectorate and the Cape province of the Union of South Africa: formerly a German colony, but since 1920 administered under a mandate by the Union of South Africa. Area (including Walvis Bay) 318,000sq.m.; population 360,000 (census 1936), including 31,000 Europeans, of whom in 1937 about 9,600 spoke German in their homes. The capital is Windhoek (pop. *c.* 19,000). The administrator, appointed by the Union Government, is assisted by an executive committee of four, and an elected legislature of 18 members. There are four high and secondary schools, and 56 other Government schools, besides German private schools, with about 70 mission schools for native children. Stock-raising is the main occupation of the people. There is a considerable export trade in skins and hides, and butter is manufactured; diamonds are mined, and vanadium worked in the north. There is a direct railway line from Windhoek to Capetown; the total mileage of railways is about 1,560. All mails are carried by air. Estimated revenue and expenditure for 1936–37 were £534,000 and £856,000 respectively; imports in 1936 were valued at £1,960,000 and exports at £3,121,000. Nazi activities by ex-German inhabitants led to a proclamation, on April 4, 1937, restricting the political activities of aliens, and also making it an offence for British subjects to give allegiance to any

Head of a State other than the King of Great Britain. General Smuts, in October, reiterated the determination of the Union to hold fast to its mandate for South-west Africa, by which it stood or fell.

SOVEREIGNS, PRESIDENTS, AND RULERS. The following list includes the names of those holding the chief positions in their country on Jan. 1, 1938.

Country	Name and Office	Accession, Election, or Appointment
Afghanistan	Mohammed Zahir Shah, King	1933
Albania	Zog I, King	1925
Argentina	Gen. Augustín P. Justo, President	1932
Australia	George VI, King	1936
	Lord Gowrie of Ruthven, Governor-General	1936
	Joseph A. Lyons, Premier	
Austria	Dr. William Miklas, President	1928
	Karl Schuschnigg, Chancellor	
Belgium	Leopold III, King	1934
	Paul Spaak, Premier	
Bhutan	Yigme Wangchuk, Maharaja	1926
Bolivia	Col. German Busch, Provisional President	1937
Brazil	Dr. Getulio Vargas, President	1934
Bulgaria	Boris III, Tsar	1918
	George Kiosseivanoff, Premier	
Canada	George VI, King	1936
	Lord Tweedsmuir, Governor-General	1935
	W. Mackenzie King, Premier	
Chile	Arturo Alessandri, President	1932
China	Lin Sen, President	1931
Colombia	Dr. Alfonso Lopez, President	1934
Costa Rica	Leon Cortes Castro, President	1936
Cuba	Dr. Federico Laredo Bru, President	1936
	Col. Fulgencio Batista, Chief of Staff	
Czechoslovakia	Dr. Eduard Beneš, President	1935
	Milan Hodza, Premier	
Danzig	Carl Burckhardt, High Commissioner	1937
Denmark	Christian X, King	1912
Dominican Rep.	Gen. Rafael Trujillo Molina, President	1930
Ecuador	Gen. Alberto Enriquez, Provis. President	1937
Egypt	Farouk I, King	1936
	Mohammed Mahmoud Pasha, Premier	
Estonia	Konstantin Päts, Pro-President	1933
Finland	Kyösti Kallio, President	1937
France	Albert Lebrun, President	1932
	Camille Chautemps, Premier	
Germany	Adolf Hitler, Chancellor	1933
Great Britain	George VI, King	1936
	Neville Chamberlain, Prime Minister	
Greece	George II, King	1935
	Gen. John Metaxas, Premier	
Guatemala	Gen. Jorge Ubico, President	1931
Haiti	Stenio Vincent, President	1930
Honduras	Gen. Tiburco Carias Andino, President	1933
Hungary	Admiral Nicholas Horthy, Regent	1920
	Koloman Darányi, Premier	
Iceland	Christian X, King	1912
India	George VI, Emperor	1936
	Marquess of Linlithgow, Viceroy	1936
Iran	Reza Pahlevi, Shah	1925
Iraq	Ghazi I, King	1933
Ireland	Eamon de Valera, President	1932
Italy	Victor Emmanuel III, King	1900
	Benito Mussolini, Premier	
Japan	Hirohito, Emperor	1926
	Prince Fumimaro Konoye, Premier	
Latvia	Karlis Ulmanis, President	1936
Lebanon	Emile Eddeh, President	1936
Liberia	Edwin Barclay, President	1932
Liechtenstein	Franz I, Prince	1929
Lithuania	Antona Smetona, President	1926
Luxemburg	Charlotte, Grand Duchess	1919
Manchukuo	K'ang-te, Emperor	1934
Mexico	Gen. Lazaro Cardenas, President	1934
Monaco	Louis, Prince	1922
Morocco	Moulai Mohammed, Sultan	1927
Nepal	Tribhubana Bir Bikram, Maharajah	1911
Netherlands	Wilhelmina, Queen	1890
Newfoundland	George VI, King	1936
	Sir Humphrey T. Walwyn, Governor	1936
New Zealand	George VI, King	1936
	Viscount Galway, Governor-General	1935
	Michael J. Savage, Premier	
Nicaragua	Gen. Anastasio Somoza, President	1937
Norway	Haakon VII, King	1905
Oman	Saiyid Said bin Taimur, Sultan	1932
Panama	Dr. Juan D. Arosemena, President	1936
Paraguay	Felix Paiva, Provisional President	1937
Peru	Gen. Oscar R. Benavides, President	1935
Philippines	Manuel Quezon, President	1935
Poland	Ignacy Moscicki, President	1926
	Felicien Slawoj-Skladkowski, Premier	
Portugal	Gen. Antonio Carmona, President	1926
	Dr. Antonio Salazar, Premier	
Rumania	Carol II, King	1930
	Octavian Goga, Premier	
U.S.S.R.	Viacheslav M. Molotov, Chairman of the Council of People's Commissars	1931
	Joseph V. Stalin, Communist Secretary	
Salvador, El	Gen. Maximiliano H. Martinez, President	1935
Saudi Arabia	Abdul-Aziz ibn Abdur-Rahman al Faisal al Saud, King	1932
Siam	Ananda Mahidol, King	1935
	Phya Phahol Sena, Premier	
South Africa	George VI, King	1936
	Sir Patrick Duncan, Governor-General	1936
	James B. M. Hertzog, Premier	
Spain	Manuel Azaña, President of the Republic	1936
	Gen. Francisco Franco, Insurgent Leader	1936
Sweden	Gustaf V, King	1907
Switzerland	Johannes Baumann, President	1938
Syria	Hashem el Atassy, President	1936
Tunis	Sidi Ahmed II, Bey	1929
Turkey	Kemal Atatürk, President	1923
United States	Franklin D. Roosevelt, President	1933
Uruguay	Dr. Gabriel Terra, President	1931
Vatican City	Pius XI, Pope	1922
Venezuela	Gen. Eleazar Lopez Contreras, President	1935
Yugoslavia	Peter II, King (Regency)	1934
	Milan Stoyadinovitch, Premier	
Zanzibar	Seyyid Sir Khalifa bin Harub, Sultan	1911

SPAIN, republic of south-western Europe, bounded by the Pyrenees, the Mediterranean, and the Atlantic Ocean, and occupying the whole Iberian peninsula except Portugal and Gibraltar; since July 1936 involved in a civil war, as a result of which the *de jure* Government at present exercises authority in the eastern part of the country only. Capital, Madrid (Government at present established at Barcelona); ruler, President Manuel Azaña (elected May 10, 1936); National flag, three equal horizontal bands, red, yellow, purple.

Area and Population.—Area : (including Balearic and Canary Islands), 196,600sq.m. Population (estimated 1934), 24,583,100. Density, 122 per sq.m. Since 1931, there has been no established religion ; the over whelming majority are Roman Catholics, but all creeds are equal before the law. Spanish (Castilian), the official language, is spoken everywhere, but Catalan (in Catalonia, Aragon, and the Balearics), Galician (in Galicia and the West), and Basque (in the Basque Provinces) are also in use. Elementary education is nominally free and compulsory ; the 1930 census showed that some 45 per cent. of the population were illiterate. There are 11 universities. The leading cities are : Barcelona (population, est. 1934, 1,148,000), Madrid (1,048,100), Valencia (353,000), and Seville (238,750). In 1934, six other cities had a population exceeding 100,000. (X.)

History.—Throughout 1937 the Civil War has continued. Its outstanding feature has been the conquest, by General Franco, between April and October, of the whole of the north-western provinces. Eibar and Durango fell on April 26 ; Guernica on April 29 ; and Bermeo on May 2. Surrounded on three sides, Bilbao was taken on June 19, after a campaign of exactly 80 days, during which the Nationalists lost General Mola, who was killed in an aeroplane accident during a reconnaissance flight.

FromBilbao, the Nationalists pushed westwards into the province of Santander, upon the capital of which they began an offensive from the south, lasting only 11 days, and ending in the fall of Santander on Aug. 25. Anxious to complete their conquest of this region before the onset of the early Asturian winter, they reached the Santander-Asturian boundary on the last day of August. The only town of any size remaining to the Popular Front Government, Gijón, was then attacked simultaneously from south and east, and fell on Oct. 21. A rapid transference of troops to the Aragon front and a new offensive directed against Barcelona were generally expected to follow, but the honours of November and December fell to the Popular Front, who first advanced south of Saragossa and then, at the end of December, made an onslaught on Teruel.

At the end of 1937 the number of provincial capitals held by the Popular Front Government was 15 out of a total of 50. It was holding rather less than two-fifths of the territory of Spain, but the possession of Madrid and Barcelona, together with large refugee-immigrations, gave it a slightly larger proportion of the population.

Madrid, now strongly fortified, remained all the year partially invested, and has suffered numerous air-raids ; Valencia was the seat of the Government until Oct. 30, when this was transferred to Barcelona. President Azaña, apart from making several speeches and once visiting Madrid, has been little seen or heard. On Feb. 1 and Oct. 1, the Cortes held short sessions at Valencia. On May 17 Dr. Juan Negrín succeeded Sr. Largo Caballero as prime minister ; his Government contained three Socialists, two Communists, and one member each from the Republican Left, Republican Union, Catalan Esquerra, and Basque Nationalist groups. The Anarcho-Syndicalists were thus excluded, as they were also from the Catalan Government in June. In mid-October, Sr. Largo Caballero was superseded as leader of the Socialist Party by an old rival, Sr. González Peña. A few days later, Don José Asensio, under-secretary for war in the Largo Caballero Cabinet, was arrested, with three highly placed officers, on charges arising from the fall of Málaga in February.

The Popular Front now has an efficient, disciplined army, and the morale of both Army and people is high. Severe penalties (up to 20 years' imprisonment with hard labour) were announced in June for those failing to present themselves when called up for service. Wrangles between U.G.T. (Socialists) and C.N.T. (Syndicalists) have been frequent, but public order has notably improved, and much less has been heard of assassinations and atrocities. Food is scarce, since refugees from territory occupied by the Nationalists, unable to stay in France, have had increasingly to cross into Republican Spain : the 4,000 Basque children brought to England in May 1937 are outstanding exceptions. Religious intolerance continues in Republican Spain : all Catholic churches, even if unharmed, are closed, and public worship is forbidden.

Catalonia, more prosperous materially than other Popular Front territory, has suffered grave political crises. In March 1937, strife between P.S.U.C. and P.O.U.M. and between U.G.T. and C.N.T. overthrew the three-months-old Generalitat Government, and a new coalition Cabinet of six was formed by Socialists, Syndicalists, and Esquerra. The murders of a Socialist and an Anarchist leader in April were followed by an Anarcho-Syndicalist revolution in Barcelona in May. Several hundreds were killed ; with the help of shock-troops from Valencia, the rebels were defeated. The Government again fell ; and power was assumed by a committee of four, succeeded on June 29 by a Cabinet (Socialists, 3 ; Syndicalists, 3 ; Esquerra, 3 ; Rabassaires, 1 ; Independent, 1), from which the Syndicalists almost at once resigned. In July, these events were followed by the arrest of the entire executive of the P.O.U.M. On Aug. 18, the Catalan Parliament held a two-day session (the first for over a year), when the Socialists attempted unsuccessfully to impeach the Speaker, Sr. Casanoves, who some months earlier had fled to France from the extremists. After this, the situation improved, and Sr. Companys' re-election to the Presidency of the Generalitat lent it stability.

In Nationalist Spain, order is excellent, food plentiful, business good, confidence of victory high, and the peseta worth over twice as much as in Republican Spain. Progress with the construction of the totalitarian State outlined in General Franco's Burgos speech of Oct. 1, 1936, has been steady, its chief features being the unification (April 19, 1937) of Falange Española and the Requetés into a single party ; the adoption of the 26-point Falangist programme ; the creation of a ' National Council ', and the appointment of its first members ; the institution of various agrarian services, notably the National Wheat Service Board ; and the announcement that social service is to be made compulsory for women. In several speeches during the year, General Franco has hinted at the possibility of an eventual restoration of the Monarchy (*see* also SPAIN, CIVIL WAR IN).

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Trade and Communications.—Agriculture is the main industry, olives, wine, and citrus and other fruits being extensively grown. The mineral wealth, especially in iron-ore, copper, manganese, lead, mercury, and potash salts, is very great. In 1935, the imports were valued at £35,172,000, and the exports at £23,528,000. There are about 10,400m. of railway (mostly of 5ft. 6in. gauge), and over 60,000m. of roads. Air services connect Madrid with Barcelona, Lisbon, Paris, and London. The mercantile

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BASQUE TROOPS MARCHING INTO GIJON AFTER SURRENDER TO FRANCO

navy includes about 900 vessels of nearly 1,050,000 tons.

Finance and Banking.—The unit of currency is the peseta, nominally 25·22 to the pound sterling, divided into 100 centavos. Its exchange value is at present very uncertain, and at the end of 1937 varied within wide limits—60 to 100 pesetas to the pound. The estimated revenue and expenditure for 1936 were £176,800,000 and £182,800,000 respectively. The Bank of Spain is in contractual relations with the State.

Defence Forces.—No reliable details of the present military and naval strength of the contending forces in Spain are available. At the outbreak of war in 1936 the army was about 140,000 strong—raised by compulsory service—and there were some 200 military aircraft. The navy includes two battleships and seven cruisers.

SPAIN, CIVIL WAR IN. The success of the 'Popular Front' in the Spanish elections of Feb. 1936 was followed by months in which the atmosphere was becoming charged with revolt. On July 13 the Fascist leader Calvo Sotelo was murdered by a band of shock police in revenge for the murder of a police officer the previous week. On July 17 the Civil War opened with the rising of the Foreign Legion in Morocco under the leadership of General Franco, who had flown there from the Canaries. That day and the next the officers of numerous garrisons led similar revolts in Spain itself. These failed in Madrid and Barcelona, but succeeded in Burgos, Saragossa, the Balearics, and other places. The great majority of the officers of the army had joined in the insurrection, but half the fleet and the bulk of the air force remained loyal to the Government, which sought to offset the defection of the army by arming the people. On the morning of the 19th the workers' militia assumed charge of Madrid, patrolling every street. The quiet was soon broken by Fascist snipers and motor guerrillas, and the process of hunting these down developed into a general outbreak of violence directed indiscriminately against those of Right Wing sympathies. A weeks-long reign of terror and confusion was inaugurated, in which many were murdered and much ecclesiastical property was destroyed. These widespread outrages were matched by deliberate ruthlessness on the other side, which, according to much neutral evidence, pursued a systematic policy, not only of giving no quarter to armed opponents, but of exterminating, in the districts where they seized control, those who were known or suspected of being politically on the Left. In this way they might safeguard their communications, while spreading fear among any who were inclined to offer resistance.

On July 24 General Mola set up a 'National Government' at Burgos; his forces moved on Madrid, but were checked in the passes of the Guadarrama Mountains. In the far north-west, the Nationalists had captured Oviedo, but were there besieged by the miners of the district. In the south the Nationalists captured Cadiz and then Seville, General Franco bringing Moorish and Foreign Legion reinforcements across from Africa, greatly helped by Italian bombers, which drove the Government warships away from the Straits of Gibraltar, thus clearing the passage. German warships appear to have given more veiled co-operation. But the part of the Spanish fleet which had joined in the revolt was also more effectively handled than the part which remained with the Government. The capture of Seville was followed by an advance northward to join hands with General Mola's forces. Badajoz was stormed on Aug. 14, a success that was followed by a particularly drastic 'cleaning up'. In the north the Nationalists forced the evacuation of Irun on Sept. 4, after a long resistance, and then occupied San Sebastian. This blow precipitated the fall of Señor Giral's moderate Government, and it was succeeded by one under Señor Largo Caballero that was predominantly Socialist.

A convergent advance on Madrid then developed. In the south, Franco pressed on Toledo, where for two months a small band of his supporters had been holding out in the citadel, and Alcázar, besieged by a much larger if ill-armed force of militia. Toledo was reached on Sept. 27, and the retreat of the militia brought relief to the heroic defenders of the Alcázar. On Oct. 1 General Franco was proclaimed head of the Nationalist Government. On the 3rd a bombing campaign against Madrid by Italian and German aircraft began, while the encircling movement on the ground was extended, small Italian tanks helping to force the evacuation of various points of resistance. The fall of Madrid was regarded as certain, not only by the Nationalists, but by most of the outside world. A counter-offensive on the 30th brought momentary respite, but when its impetus slackened, the Nationalist troops followed up the ebb and established themselves in the outskirts of the city, although checked at the bridges across the Manzanares River. On Nov. 7 the Government left for Valencia, entrusting the defence to General Miaja. Next day the first detachment of the International Brigade, a force of foreign volunteers recruited from many nationalities, appeared on the scene and greatly stiffened the resistance. A few days later the attackers' superiority in the air was effectively challenged by the Government's air force, reinforced by Russian fighter machines which had newly arrived. Air attacks became increasingly unprofitable, when results were weighed against risks. On land, now that direct attack had superseded the earlier phase of manoeuvre, the modern superiority of the defensive was manifested afresh. Franco's continued offensive efforts brought more loss than gain, and his progress everywhere became stagnant.

During the winter a state of deadlock prevailed, hardened by the weather. During these months the Government forces on the whole remained on the defensive, and succeeded, despite their inferior equipment and training, in frustrating the Nationalists' efforts to extend their gains. With each month of continued successful resistance, the Government's prospects were likely to improve—so long, at any rate, as General Franco did not receive a great increase of assistance from foreign sources. The deadlock was broken in February by the fall of Málaga, a Nationalist coup which was marked by good strategic judgment as well as by Italian backing on a new and important scale. The resistance was light, its moral stability being easily shaken by the effect of suprise on a state of unpreparedness.

The effort had a significant moral reaction. The Government were spurred to change their strategy, and to attempt a widespread series of offensives. These, as was to be expected, made no great material impression, except on the casualty totals. As was also to be expected, the exhaustion of the attackers offered a more promising opportunity for the Nationalist forces to renew their offensive. It remained to be seen whether General Franco's forces were capable of exploiting it sufficiently under the conditions of modern warfare. Their most threatening effort was the three-pronged stroke from Siguenza southwestwards towards Guadalajara and Madrid, delivered on March 8, 1937. It followed an attempt to cut the road to Valencia, which, though incompletely successful, had drawn off the Government's best troops to the south. While the Guadalajara stroke preserved the assets of surprise and mobility, its promise was high, but these waned all the sooner because of the intervention of bad weather, which gave the resistance time to harden and to be reinforced by General Miaja. Stuck in the mud, the Italians, who largely composed the attacking force, soon became ripe objects for a counterstroke, which came on March 13. Its dramatic success repeated the experience of the World War, where the most striking victories, so long as the forces were fairly well matched, were produced by action of the counter-offensive form. It also showed, as the Abyssinian War had shown previously, that aircraft are specially formidable in such action, and that their advent has greatly enhanced its power.

In the spring of 1937 the Nationalists, baulked elsewhere, concentrated their efforts on an offensive campaign against the isolated Basque territory on the northern coast. Frequent cloud in the mountains at first hindered the use of the mass of Italian and German aircraft which had been concentrated for this purpose and, so long as this friendly cloak remained to compensate the Basques' lack of air defences, they proved able, though only a militia, to hold up the attack of superior ground forces. The experience showed that so long as troops in defence have the spirit to resist, their resistance is likely to prevail even under adverse conditions of training and equipment. A change in the situation came with a temporary improvement of flying conditions, and the progress which the Nationalists subsequently achieved coincided with their opportunities to employ their air superiority as a tactical lever, in loosening the defence of key positions which offered a well-defined target. Entrenchments in the mountains were far more visible from the air than those sited in valleys or plains. And the Basques were almost entirely lacking in either aircraft or anti-aircraft artillery with which to counter the threat overhead. Systematic air bombardment is hard to endure if there is a lack of direct counter-means, especially where the troops exposed to it know that their resistance on the ground does not suffice to cover their homes, and that their families are suffering a similar bombardment which they can do nothing to check.

A further asset which the Nationalists and their foreign allies used with marked effect in the Basque compaign was the concentration of artillery fire—as many as 200 guns on a 1½-mile sector—to blast a hole at a particular point where it was desired to drive in a wedge, and thereby loosen the general front of the defenders. If such a volume of fire was an indication of the extent to which their artillery had been reinforced from foreign sources, the concentration was facilitated and enhanced through the way it was made a complement to the air bombardment, spread more widely. Its greatest effect was achieved when the Basques fell back on their so-called 'Iron Ring' close to Bilbao, a line whose length without depth was its weakness. In contrast to the difficulty which the Nationalist artillery had met during the time of the Basques' manœuvring withdrawal, they were now presented with a fixed and clear target, while the moral effect on the defenders, when a hole was punched in this line which had seemed so strong, was all the greater because the troops on the flanks of the breach felt themselves suddenly 'at a loose end', deprived of the firm pivot on which they had been made to lean too heavily. Lack of elasticity made the defensive dispositions brittle. It was a lesson of wider significance, confirming the experience of the last war, and showing that the best defence is the mobile form rather than the more obvious one of taking up, or falling back quickly to occupy, too obvious positions.

The capture of Bilbao in June was followed, after a short interval, by the advance on Santander, another objective where the defence was handicapped by lack of room for a manoeuvre in retreat within the narrow coastal strip, as well as by lack of means to nullify the attackers' main weapons. To these was now added the use of tanks on a larger scale and with more effect than ever before in the Spanish War. The high ratio of machine-power to man-power was a significant feature of this offensive. According to report, the attackers used five small infantry divisions, totalling about 5,000 men apiece, but with them were employed about 200 tanks, nearly as many fighting and bombing aircraft, and artillery numerous enough to concentrate 18 batteries on the front of a single small division, with apparently a similar quantity supporting others. The August operations which culminated in the capture of Santander had been the one clear triumph of the offensive during the Spanish War hitherto, although recognition of the fact has to be qualified by recognition of the defenders' weakness. It suggests that raising the ratio of machine-power offers the only chance of successful attack, if it does not justify the assumption that this will prevail against a defender with similar equipment.

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GIJON IN RUINS. THE WHITE SHEETS HANGING ON THE BALCONIES OF THE REMAINING HOUSES SIGNIFY THE SURRENDER OF THE TOWN

On land, the experience of the war has strongly supported the evidence of the World War that the defence is paramount at present. This has added significance, because relatively small forces in vast areas offered the attack more scope and a better chance, than it had on the closely packed Western Front. There have been a few successes gained merely by manoeuvre. But offensives by either side have in general had small effect in proportion to their cost of life. And, even when a local moral breakdown has momentarily cleared the attackers' path, experience has again confirmed that of the World War in showing that conditions set a term to their powers of exploiting it. In taking the offensive, each side was embarking on a venture whose tactical foundations were unsound, and whose slender chance of any great effect lay in the psychological sphere—in the possibility that the opponents might be ripe for a moral collapse. Otherwise a heavy sacrifice of life with little to show was the probable result. The original circumstances of the campaign, a military revolt against the Government, compelled General Franco to adopt an offensive strategy if he was at attain his aims; the extent to which his forces have pursued the offensive tactically would seem to have been more avoidable, and more dangerous to his cause. Hitherto, it has only brought a profit where he has been able to concentrate a great superiority of bombers, guns, and tanks against an isolated section of the opposition which has lacked the means to combat them as well as the depth of ground to avoid them.

On the other side, the contrasting circumstances of a Government without an army helped to produce a wiser tactical course, and this was long maintained. Its abandonment by the Government in Feb. 1937 may be traced to later circumstances which were too strong for restraining calculation. Raw troops and mass levies are apt to lose morale when kept to the defensive, though it may be well suited to their conditions tactically; even trained forces may falter if thus restrained, unless they have been carefully taught that the highest art of soldiership lies in utilizing the advantages which fire defence and calculated withdrawal offer for entrapping the opponent. None the less, the side which nowadays pins its hopes to the attack courts the risk of undermining its own troops' morale in the effort. That risk has matured first on one side and then on the other.

General Franco, who started with the advantage in trained troops, could least afford to waste them: as he has done, not merely under pressure of circumstances. Since the autumn of 1936 he has been increasingly dependent on foreign resources in far greater measure than his opponents. And as the months have passed, it has become clear that his chances of military victory depend on the forces poured in by Italy and Germany—not so much in man-power, as in technical resources. (B. H. L. H.)

SPANISH AMERICAN LITERATURE. Since the World War Spanish American letters reveal greater individuality and more independence of Europe. The most inclusive literary history appearing during 1937 was by Luis Alberto Sanchez; *Cuban Poetry in 1936* was edited by Juan Ramón Jiménez and José Maria Chacón.

The novel is well represented. Rómulo Gallegos wrote *Pobre Negro* that has passages the equal of anything he has written; L. M. Urbaneda Archelphol, *La casa de las cuatro pencas*, describes a provincial town; Julian Padrón, in *Candelas de Verano*, depicts Venezuelan country life; Mariano Azuela strikes a note of political criticism in *El Camarada Pañtoja*; Mauricio Magdaleno utters the same criticism in *El Resplandor*. Another interesting novel is *Alas Abiertas*, by Alfonso Teja Fabre. The hardships of colonization are vividly described by Manuel Méndez Ballester in *Isla Carrera*. *Cienega*, by Luis Felipe Rodriguez, is a recasting of an excellent novel.

Other prose works include Eduardo Mallea's *Historia de una pasión Argentina*. Arturo Uslar Pietri, in *Red*, reveals the critical touch of an artist. *Nuevas Páginas Libres* is from the master prose writer, González Prada. Ramón Díaz Sánchez's *Transición* is a study of Venezuela's present-day affairs. José Vasconcelos, in *Breve historia de Méjico*, praises Cortes and the Spaniards as benefactors of Mexico. *Hombres y zorros*, by Mariano La Torre, relates country scenes in concise style. *Visperas de España*, by Alfonso Reyes, are the collected works on Spain by this excellent critic. *Madrid*, by Demetrio Aguilera Malta, has vivid description. Among the most elucidating biographies one should consider *Diegro Portalés*, by Magdalena Petit, a dramatic life of the Chilean leader; *Obregón*, by Hernán Robleto; *Luis A. Martinéz*, by Augustus Arias; Medardo Vitier's *Varona: Maestro de juventudes*, a study of the Cuban philosopher; and *Balmeceda, politico romántico*, by Luis Enrique Delano, interesting, but journalistic.

The artistic soul of Spanish Americans pours itself out readily in poetry. *Poemas del amor doliente*, by José Santos Chocanos, are unedited marital love songs. Nicolás Guillén handles political poetry superbly in *Cantos para soldados y Sones para turistas*, as well as in *España: Poema en cuatro augustias y una esperanza*. In *España en el corazón*, Pablo Neruda shows imagination and intensity. Elías Nandino has feeling and sensual conflict in *Sonets*. *Ultimos poemas* is the most important collection of María Monvel. Xavier Icaza's *Marea Encendida* is a modernistic expression of love in its natural aspect, while *Triptos de amor y desamor* are musical stanzas of a passing love affair. Victor M. Rendón sings in classical form his *Himnos, votos y homenajes*. *Poesías* of Ruperto Cómez is a selection made by his sons. The dramatic poem, *Pasión y Muerte de Silverio Leguizamón*, of B. Canal Feijó, is admirably written.

SPANISH AND PORTUGUESE LITERATURES. Spain.—The year 1937 saw many publications from both sides in the Spanish conflict. On the Government side, poetry was represented by the collection *Romancero general de la Guerra civil*, by such writers as Altolaguirre, Varela, Infante, Garfias, Bergamín, Dieste, Prados, Hernández, and Plaja; and the series *Poetas de la España leal*, by such as Antonio Machado, J. M. Villa, R. Alberti, Altolaguirre, Cernuda, Prados, and Hernández. These authors also contribute to the monthly *Hora de España*, which is largely non-political. *Madrid*, another review, published in Valencia is almost entirely non-political.

Among the Government prose-writers, Manuel Benavides wrote a novel on the present situation, *Crimen de Europa*. The president of the republic, Manuel Azaña, himself an essayist and poet, published various speeches. One of Spain's greatest writers, Juan Ramón Jiménez, did much in Cuba to help the Government. A number of important Spanish writers remained neutral in Paris.

On the Insurgents' side, the prolific essayist E. Giménez Caballero, has written *La Nueva Catolicidad* and *La Falange lecha hombre conquista el estado*. One of the most ardent of Spanish poets, actually in Buenos Aires, E. Marquina, brought out *Por el amor de España*. The poet and playwright, J. M. Pemán, produced: *Atención! Atención!*; *Almoneda*; and *Cartas a un Escéptico en Materia de forma de Gobierno*. Amongst much political and theoretical writings were G. P. L. Suarez's *La España que muere y la España que nace*, General Mola's *Doctrinal de un Héroe y Hombre de Estado*, and Retortillo's important *Razones juridicas de nuestra guerra.*

Among the poems dealing with the war from the Insurgents' side were A. Martin's *Castill y la Guerra* and *Romancero guerrero*, Muñoz San Roman's *Ideario patriótico* (this author also wrote a novel, *Las Fieras Rojas*) and Alconchal's *La novena cruzada.*

Portugal.—The literary event of 1937 for Portugal was the fourth centenary in April of the death of Gil Vicente, the great dramatist, which gave rise to a large number of books.

Two volumes of poetry were outstanding, namely, *Epopeias, Diálogos com Deus* by António Marques Matias, and *O Homen Universal* by Teixeira de Pascoés, who tried in this book to discover the essential theme of life.

Several collections of essays appeared during the year, such as: José Bacelar's *Realidade, Nebulosidade, Falsificação*, Samuel Maia's *Este Mundo e o Outro*, and *Ensaio de Interpretação bergsonista*, by Guilherme de Castilho.

Works of general interest included A. Pereira e O. Cesar's *Os Amores de Wenceslan de Morâis*, M. de S. Ribeiro's *Guitarras de Alcácer*, C. M. Dias' *Cartas de Amor*, and Aquilino Ribeiro's *O galante sèculo XVIII.*

Literary criticism and history were well represented by *Portugal e Marrocos no Século XVIII* by F. A. Oliveira Martino, *Um Ano Trágico em 1836* by Varela Aldemira, *D. Alfonso VI* by J. and A. Pires de Lima, *D. João V e a Santa Sé* by E. Brazão, and A. Simenta's *Subsidios para a História de Portugal.*

The novels of 1937 included: *Fui en que matei* by Sousa Costa, *A Casa fechada* by Vitorino Nemésio, *Tres raparigas em liberdade* by Amadeu de Freitas, and *S. Banaboião, Anacoreta e Mártir* by Aquilino Ribeiro. (S. L. En.)

SPANISH MOROCCO, zone in the north of Morocco, opposite Gibraltar, about 13,000sq.m. in area, with a population of 800,000; a Spanish protectorate, ruled by a High Commissioner representing the Spanish Government, the powers of the Sultan of Morocco being delegated to a Khalifa. Capital, Tetuan (pop. *c.* 50,000). The people are Mohammedan Berbers or Moors, speaking Arabic or Berber dialects. Agriculture is carried out on primitive lines, and iron is mined; there are about 80m. of railway, and over 500m. of passable roads. Shipping trade is mainly through Ceuta, which, though on the African coast, is an integral part of the Spanish mainland.

The Spanish civil war at present being waged began in July 1936 by a rising of troops in Spanish Morocco, which has since remained in the hands of the insurgents, who have poured large numbers of Moorish troops thence into the peninsula. In Jan. 1937 the French Government protested against the alleged infiltration into Spanish Morocco of German troops and the development of German military and commercial interests, including the building of barracks for a German armed force; but Hitler replied with a statement that Germany had no designs there. In May the Spanish Government declared that it looked upon the Moors in Franco's forces as foreign, not Spanish troops.

SPANISH WEST AFRICA. Under this heading are included a number of Spanish settlements on the West coast of Africa and in the Gulf of Guinea.

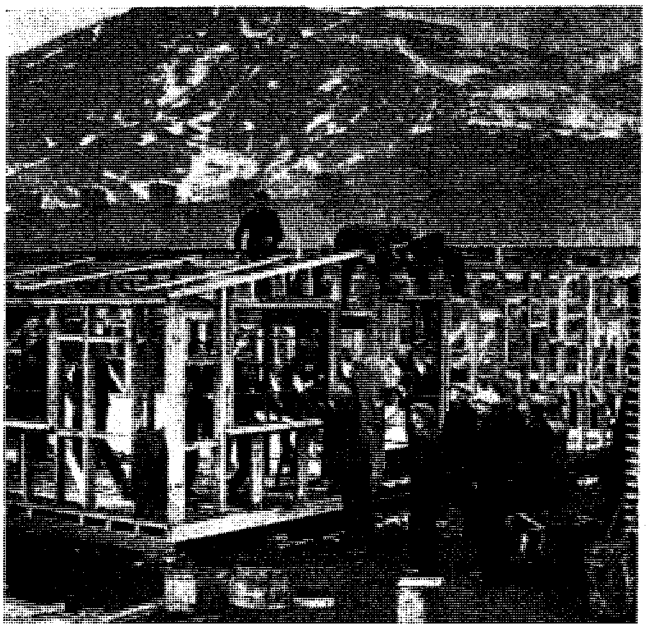
Rio de Oro and **Adrar** extend along the N.W. coast from the Wadi Dra'a river to Cape Blanco. The area is 109,200sq.m., and the population are mainly nomadic Arabs, with less than 1,000 European inhabitants. The capital is Villa Cisneros. The territory is practically waterless. **Ifni,** farther to the north, is a coastal strip of 965sq.m. at the S.W. end of the Atlas mountains. The estimated population is 60,000.

Rio Muni is a coastal settlement between the Cameroons and French Equatorial Africa, extending about 125 miles inland. The principal town is Bata, and the area is 9,470sq.m.

Fernando Pó, an island in the Gulf of Guinea, is the most valuable of these possessions. Its area is *c.* 781sq.m. and pop. *c.* 20,870. The capital is Santa Isabel. The products are ebony, mahogany, palm products, and very valuable cocoa. The other Spanish islands in the Gulf of Guinea (Annobon, Great Elobey, Little Elobey, and Corisco) have a combined area of *c.* 14sq.m. and pop. of *c.* 3,000. Rio Muni and the Islands are together known as Spanish Guinea.

SPECIAL AREAS. The British Government created a precedent in 1934 when they appointed a Commissioner for Special Areas with wide powers to provide work in the distressed areas of Glamorgan and Monmouthshire in South Wales, Durham, and parts of Northumberland in North-east England, Cumberland in the North-west, and Clydeside and smaller areas of the East Coast in Scotland. A revolutionary change was effected by the Special Areas (Amendment) Act, which received the Royal Assent on May 6, 1937, and granted power to the Commissioners to give financial assistance to private enterprise. This was because of the comparative failure of the Commissioners in the previous two and a half years to persuade industry to move to the distressed areas. The Government Defence Programme has contributed in the past year to the reduction of 72,344 in unemployment in the Special Areas. The Commissioner's latest report (Nov. 1937) states that the cost of Government factories and agency factories in connexion with defence, erected or in course of erection in the Special Areas of England and Wales, is approximately £15,500,000. In addition, between April 1, 1936, and the end of Aug. 1937, orders to the value of £32,870,000 were placed in the Special Areas of England and Wales by the Service Departments. In spite of these orders and of the new powers conferred upon the Commissioner to subsidize industry, transference schemes to more prosperous areas have led to 43,000 leaving their homes. In addition, the population fell in the year ending June 1937 by 37,929. On Sept. 13, 1937, there were still 210,608 unemployed workers in the Special Areas. The Government committed themselves, up to Sept. 30, 1937, to a total expenditure of £12,900,000. The largest items of expenditure give a good idea of the types of schemes which have been favoured up to now, not only for the provision of employment, but the establishment of social amenities in districts rendered unsightly by the remains of dilapidated mines and factories. The heaviest expenditure (£3,080,000) has been on small-holdings schemes: then come trading estates and individual sites (£2,850,000), hospitals (£1,780,000), and sewerage disposal schemes (£1,715,000).

In addition, the trustees appointed to administer a fund of £2 millions given by Lord Nuffield (*q.v.*) in Dec. 1936, announced that they have promised financial assistance to 43 industrial undertakings in England and Wales to the extent of £1,346,000. Most of this money is being used in financing new industries. Another fund, the Special Areas Reconstruction Association, it was stated at the first



Fox Photo]

UNEMPLOYED MINERS AT TREHERBERT, SOUTH WALES, BUILDING THEMSELVES A CLUB HOUSE. THE MATERIALS HAVE BEEN SUPPLIED FREE

general meeting in Sept. 1937, had agreed to loan £403,450 to 67 concerns which were providing a combined capital of £786,720 from other sources.

The immediate future policy of the Commissioners for Special Areas will be to induce established firms in other parts of the country to set up branch establishments in the Special Areas, and to induce new firms to open their first factories there.

The power conferred on the Commissioners in May 1937 authorized them to let factories at special rents and rates to any industrial undertaking: the Commissioners may offer financial assistance to companies towards rent, rates, and income-tax; and loans may be made towards factory extensions.

It is obvious, from the terms of this Act, that the Government have assumed a new responsibility for the location of industries. A separate Report was issued for the Special Areas in Scotland. Since the end of 1934, when the Commissioner began operations, unemployment in the Scottish Special Areas fell from 94,998 to 58,318 (June 1937).

SPEEDWAY RACING. In 1937 speedway racing enjoyed greater popularity than ever before. Attendances at the seven first- and six second-division tracks exceeded 4,250,000, an increase of 40 per cent. on 1936, and on Sept. 2 at Wembley 85,000 spectators, a world record for speedway racing, saw the world championship final.

West Ham won the first-division league title with the team that had finished last in 1936, but they were beaten by New Cross in the final of the *Evening News* London Cup. Bristol won the second-division championship after a hard fight with Southampton. Belle Vue (Manchester) secured the National Trophy for the fifth successive year.

After Australia had been well beaten by England in the first test match, it was decided to abandon the series because the Australians could not raise a strong enough side. Instead, five matches were raced between England and Overseas. Australians, Americans, a Canadian, and a New Zealander rode for Overseas, who won the rubber with three victories to England's one. The other match was drawn.

Individually, English and Colonial riders were not very prominent, for three Americans, Jack Milne, his younger brother Cordy Milne, and Wilbur Lamoreaux, all of Pasadena, California, won the big solo prizes. Jack Milne was the rider of the year. At Wembley he finished first in the world championship; Lamoreaux was second; Cordy Milne third; and an Englishman, Jack Parker, fourth. From April to Oct. Jack Milne earned £3,300 and set up a record by winning 671 races, most of them for his club, New Cross.

Midway through the season first-division riders threatened to strike if any more Americans rode in this country. The strike was called off at the last moment, but before the season ended Earl Farrand, Manuel Trujillo, and several other newcomers from the U.S.A. appeared in London and the provinces.

Serious accidents were few, though in Aug. Stanley Hart, a Manchester junior, was fatally injured in an accident at Birmingham. A month later another novice rider, R. Vigor, died in hospital after a crash at Wimbledon.

Clubs competing in Divisions I and II finished in the following order:

Division I.—West Ham 1; Wembley 2; New Cross 3; Belle Vue (Manchester) 4; Hackney Wick 5; Harringay 6; Wimbledon 7.

Division II.—Bristol 1; Southampton 2; Nottingham 3; Belle Vue Merseysiders (Manchester) 4; Norwich 5; Birmingham 6. (J. Se.)

SPICES. The international trade in spices, which are principally used in the production of sausages, sauces, and pies, is chiefly directed towards the United States, the United Kingdom, and western Europe, the main exceptions being the trade in cloves, directed towards India and the Netherland East Indies, and that in chillies, directed towards Ceylon. The greatest demand for the cinnamon of Ceylon is in Spain and Spanish America.

Of the various spices important in international trade, pepper is derived chiefly from the Netherlands East Indies, cloves come from Zanzibar and Madagascar, and the ginger plant is cultivated widely in tropical countries, including many parts of the British Colonial Empire. China is the leading exporter, the fresh ginger being sent to Hong Kong, where it is preserved and exported.

The Netherland East Indies export annually about 80,000cwt. of nutmegs, and Grenada about 25,000cwt. India exports each year about 170,000cwt. of chillies, together with smaller quantities of cardamoms and other spices. Ceylon's export of cinnamon averages about 45,000cwt., and about 90,000cwt. of pimento are exported annually from Jamaica. Zanzibar and Grenada are the only countries where the trade depends very largely on the export of spices. Although India is an important source of supply of pepper, ginger, and other spices, the trade in these commodities makes up a very small part of the total exports.

Generally, more than one-half of United Kingdom imports of pepper comes from Empire countries, such as the Straits Settlements, India, and Sarawak, although much of that shipped from the Straits Settlements is grown in the Netherlands East Indies. Imports in 1934 and 1935 were exceptionally large, owing to abnormal trading, but in 1936 and 1937 there was a considerable decrease. The British re-export trade in pepper is chiefly with the United States, Canada, and Germany. Practically all the British imports of cloves and fresh ginger are of Empire origin, and a very large part of the other spices also come from the Empire.

The United States for some years has maintained the chief position among all other countries in the direct consumptive demand of practically all kinds of spices, the only two exceptions being ginger and chillies. (A. E. Wi.)

SPIRITS. The world's greatest producer and consumer of spirits is the United States, and the development of the American market since Prohibition days has, either directly or indirectly, revolutionized the spirit trade of the world. When the United States repealed Prohibition, the country was without matured stocks of whisky. There were, however, plenty across the border in Canada, and the distilling industry of that country was saved from a serious crisis. Since repeal, stocks of matured spirits are being built up in the United States, and although higher taxes and enhanced prices tend to make the *pro rata* consumption lower, yet the production is now considerably higher than it was in 1917. Thus, in the fiscal year ending June 1937, 223,682,019 proof gallons of whisky, 2,523,629 of rum, 7,209,475 of gin, and 12,425,922 of brandy were produced, as compared with 57,651,834 proof gallons of whisky, 2,842,921 of rum, 5,756,666 of gin, and 8,251,097 of brandy in 1917; while in the fiscal year ending June 1937, tax was paid on 72,878,710 proof gallons of whisky, 532,325 of rum, 7,264,481 of gin, and 1,966,574 of brandy, as compared with 83,591,339 proof gallons of whisky, 659,815 of rum, 5,408,321 of gin, and 3,551,084 of brandy in 1917. At the same time, however, taxes paid in 1937 on neutral spirit were for only 32,257,537 gallons as compared with 71,081,121 in 1917. It is estimated that up to 50 per cent. of this neutral spirit is used in the production of gin, and about one-third for blending with whisky, from which it is obvious that spirit blends are much less popular than formerly. In the United States blending is for cheapness, in contradistinction to the Scotch ideal, which is to harmonize in the one bottle the maximum number of high qualities.

In the United Kingdom, particularly in Scotland, the results of repeal have been far-reaching. After the World War, heavy duties and dwindling markets at home and abroad led to a steady contraction in the industry, both as regards the number of distilleries and of blending houses; but now that the American demand is several times what it was in pre-war days, and consumption throughout the world has increased again, the renovated distilleries have relit their fires. Imports of spirits from the United Kingdom to the United States rose from 1,496,995 proof gallons in the first 11 months of 1935 to 3,921,666 proof gallons for the same period in 1937. The blender, however, requires age and maturity in the single whiskies (he may use 40 or 50 of them), which he marries into his blend, and prices for single whiskies stand at unprecedented levels.

Next to whisky and gin, the favourite spirit with the Anglo-Saxon countries is rum. Large quantities are now being produced by the United States, particularly in the Virgin Islands; but Jamaica still produces the world's premier rum. Substantial quantities are also exported from other islands in the British West Indies. Brandy is not selling so freely as it once did, but the reputation of cognac remains as high to-day as ever.

PRODUCTION AND CONSUMPTION OF SPIRITS IN UNITED KINGDOM

	1935* Pf. Gals.	1936* Pf. Gals.	1937* Pf. Gals.
Spirits distilled in the United Kingdom .	39,709,009	47,200,876	59,648,336
Total quantity of British spirits retained for home consumption . .	5,520,083	5,891,957	6,122,758

* Up to Sept. 30.

EXPORTS OF BRITISH SPIRITS

	1935*	1936*	1937*
Total in pf. gals. . .	5,903,557	7,671,957	8,685,483

* Up to Nov. 30. (D. F. C.)

SQUASH RACKETS. The growth of the popularity of squash rackets was maintained at a steady rate during the past year. Thirty new clubs were formed, making a total of approximately a thousand squash rackets clubs in England open to the public. Cricket and lawn tennis clubs, too, are finding the introduction of squash a most satisfactory method of sustaining the interest of their members during the winter months.

F. Amr Bey remains as the unequalled exponent of the game. He has won the Open Championship, and the Amateur Championship, his contest with J. Dear in the former event being generally considered productive of a standard of play touching new heights of brilliance. J. Dear is the professional Champion, while Miss M. Lumb is the holder of the Ladies' Championship. The County Championship was won by Sussex, who beat Cheshire in the final, and the University match by Cambridge.

In the midst of the wave of popularity there has been an unfortunate rift in the hitherto friendly relations between the Squash Rackets Association and the Squash Rackets Professional Association. The adoption, by the S.R.P.A., of a Standard ball, to be used by its members and in its tournaments, and stamped with the initials of the Association, was the primary cause of the difference. The S.R.A. expressed displeasure over this action, and the general standing of the professional body has been under review. An amicable settlement of the dispute is both necessary and desirable.

The 1937 championships of the United States were played at Cleveland, Ohio, where Germain G. Glidden, of the Harvard Club of New York, retained his title by defeating Neil J. Sullivan of the Germantown Cricket Club of Philadelphia. The national squash rackets team championship of 1937 was won by the Boston team of Harry K. Cross, Edwin G. Hoehn, John H. Hull, A. M. Sonnabend, and R. V. Wakeman. In the doubles national championship, the Philadelphia team of Roy R. Goffin and Neil J. Sullivan won for the fifth consecutive year.

The Canadian championships in squash rackets are also open to Americans. The singles championship, played in Hamilton, Ont., was won by Neil J. Sullivan. The doubles title tourney was played in Montreal, where Arthur H. Barker and Stanley Calowin, both of New York, defeated John Cornish and A. M. Sonnabend, both of Boston. This competition is for the A. F. Crichton challenge cup.

STALIN, JOSEPH VISSARIONOVICH (born Djugashvili) (1879–), Russian statesman; born at Gora, Georgia, became an associate of Lenin in revolutionary work in Tsarist Russia, and was deported to Siberia in 1912. After the 1917 revolution, he became editor of *Pravda*, and in 1922 was appointed general secretary of the Communist party of Soviet Russia, succeeding Lenin on the latter's death in 1924 as the principal figure and virtual dictator of the Soviet Union, a position which he consolidated by the expulsion (1927) of Trotsky and his followers.

After the expulsion of Rykov and Bukharin from the party in 1937, Stalin, in a speech to the central committee of the party on March 3, denounced the Trotskyist movement as 'an unprincipled organization of wreckers employed by foreign capitalist States' aiming at the destruction of Soviet achievements, and working hand in hand to that end with Germany and Japan. In June, the condition of Stalin's heart gave rise to some anxiety, and he was visited by a Vienna physician. In November it was proposed to recognize his position in relation to the Russian nation by conferring on him the new title of 'Possadnyik', or 'protector' of the State. At the elections in December, for the new Supreme Council of the U.S.S.R., Stalin was nominated for a large number of constituencies, and returned for a division of Moscow, after declaring on the day before the polling that Soviet Russia's first general election, in which no candidate not approved by the government was allowed to stand, was unexampled in history as the freest and most democratic election ever held in any country.

Wide World Photos]
JOSEPH STALIN

STAMP COLLECTING: *see* PHILATELY.

STATE LEGISLATION. In retrospect, the year 1937 was characterized in the United States by four major trends in State legislation: (1) increased social legislation of all kinds; (2) a search for new sources of income and a continuance of emergency taxes; (3) reorganization and improvement of State administrative machinery, and (4) added impetus to the movement for inter-State co-operation.

Social Legislation.—The year saw the establishment in 18 States of welfare or public assistance departments and the reorganization of such departments in four other States. Every State was brought within the list of those which have an unemployment compensation law, while Virginia was the only one which had no federally approved plan either for old-age assistance, aid to dependent children, or aid to the blind. Workers in many occupations in widely scattered States will benefit by shorter hours, safer working conditions, better pay, increased disability compensation, and machinery for improved labour relations as a result of State labour legislation during 1937. Progress in the child labour field (*q.v.*) was also marked.

Housing.—Eleven States enacted new housing authority laws, and nine States amended existing statutes. Thirty jurisdictions now have housing authority legislation.

Planning and Zoning.—Two States provided for country and metropolitan planning boards, while enabling legislation for city boards was passed in six States. Several States made provisions for county and township zoning, although city zoning continues to have wider acceptances.

Education.—Ten States enacted new or revised teacher tenure legislation, while new or revised teacher retirement laws were passed in 17 others. Other important teacher welfare legislation included the enactment of minimum salary laws in four, and the revision of certification laws in eight, States.

Health.—The most recent development in public health has been the interest shown by the public and by officials in the problem of social disease. A reflection of this interest has been the enactment of a number of hygienic marriage laws.

Crime Control.—The rapid acceptance and enactment by the States of one or more phases of the four-point legislative programme sponsored by the Inter-State Commission on Crime of the Council of State Governments has been of primary importance. This includes model bills to permit close pursuit by police across State lines, simplified extradition procedure, reciprocal supervision of out-of-State parolees and probationers, and simplified procedure for securing out-of-State witnesses in criminal proceedings.

Tax Legislation.—Of the two most fruitful sources of State income (sales and gasolene taxes), the gasolene tax continued the more popular, and four jurisdictions raised their rates on this tax while several others continued emergency rates. Two new States put sales taxes into effect, and several others raised their rates or acquired accompanying use taxes. Colorado and Maryland entered the income-tax field, placing levies on both personal and corporate incomes.

State Administration.—Kentucky and Tennessee completely reorganized their governmental machinery, and placed more direct responsibility over department heads in the governor. Partial reorganizations were made in Connecticut and in Wisconsin. Arkansas, Connecticut, Maine, Michigan, and Tennessee adopted civil service systems for their State employees.

Inter-State Co-operation.—Significant from the standpoint of inter-State and Federal-State relations, has been the rapid growth of the Council of State Governments through the establishment of commissions on inter-State co-operation by the States. During 1937, 35 States had such commissions. The Council seeks to develop better co-ordination and more active co-operation between groups of States in the various regions of the United States, and also between the 48 States as a whole. It also seeks to bring the State governments into better adjustment with the Federal government and with county and city governments.

STEEL: *see* IRON AND STEEL.

STEVENSON, JAMES ALEXANDER, British sculptor; born at Chester, Oct. 18, 1881; died Oct. 5, 1937. He studied at the Royal College of Art, London, under Prof. Lanteri, won the College's travelling scholarship, and was also Landseer Scholar in Sculpture at the Royal Academy Schools. From 1911 to 1914 he was modelling master at the Regent Street Polytechnic. He exhibited at the Royal Academy, the Paris Salon, and the International Society. His bust of Sir Frederick Kenyon is in the Board Room at the British Museum, and that of a Roman Emperor ('Imperator') is in the Tate Gallery. Among his other work was the War Memorial to Devon Regiments in Exeter Cathedral. To avoid confusion with another sculptor with a name identically the same except for its spelling, he used to sign his work by the *nom de plume* of 'Myrander'.

STEWART, SIR HALLEY, British financier and philanthropist; born Jan. 18, 1838; died at Harpenden, Herts., Jan. 26, 1937. He was vice-chairman of the London Brick Company and Forders, Ltd., brickmakers, and amassed a large fortune. The Halley Stewart Trust for Research towards the Christian ideal in social life was founded by him in 1925 with £200,000, which was afterwards raised to £350,000. He sat as Liberal M.P. for the Spalding division of Lincolnshire, 1887–95, and for Greenock, 1906–10. He was knighted in 1932. His wife, Jane Elizabeth Atkinson, whom he married in 1865, died in 1924; they had two sons and a daughter.

STIEGLITZ, JULIUS OSCAR, American chemist; born in Hoboken, N.J., May 26, 1867; died in Chicago, Jan. 10, 1937. He received the degree of Ph.D. from Berlin University in 1889. In 1892 he joined the faculty of the newly founded University of Chicago, becoming a full professor of chemistry in 1905, chairman of the chemistry department in 1915, and director of the university laboratories (1912–24). During the World War, he served as special expert to the Public Health Service, chairman of the committee on synthetic drugs, and vice-chairman of the division of chemistry of the National Research Council. He was president of the American Chemical Society in 1917 and of the Chicago Institute of Medicine in 1918. The American Chemical Society awarded him the Willard Gibbs medal in 1923. Stieglitz was among the first to apply the electron theory of valence in organic chemistry. His other researches included catalysis, molecular rearrangement velocities, saponification of imidoesters and positive halogens.

STOCK EXCHANGE, THE. After rising uninterruptedly since the middle of 1932, industrial share prices fell between 20 and 25 per cent. during 1937, and the London Stock Exchange was forced to adapt itself to a reduced volume of trading, and a succession of shocks which had no equal since the depression. Despite severe technical strain in May and again later in the year, the Stock Exchange demonstrated its great underlying strength, and the two or three failures which occurred were all of insignificant dimensions. In April, the erroneous 'gold scares' provided the market's first test; they were followed in a few weeks by the first version of the National Defence Contribution, which brought Stock Exchange business, including new capital issues, to a standstill. Finally, the break in Wall Street at the beginning of September again depressed prices in London. A substantial volume of forced selling was released by the closing of impaired margin accounts, and, but for co-operative efforts by important Stock Exchange firms to support intrinsically sound, but temporarily weakened, positions, the situation might have developed seriously. By the end of the year, equity share prices were discounting some recession in the high level of industrial activity.

Unlike the New York Stock Exchange, the London Stock Exchange provides no measure of turnover. All the evidence, however, suggests that the volume of business had fallen to such low levels at the end of the year that brokers were fortunate to cover their expenses. For the investor, last year's fall in industrial share values absorbed 23 per cent. of his capital. The fall in a mixed portfolio of gilt-edged, industrial debentures, and preference shares, however, was no more than 5½ per cent. Gilt-edged stocks, in fact, recovered considerably from the low levels touched during the summer. War Loan, which at one time fell below par, for the first time since 1933, closed at 101¾, while the National Defence Bonds carrying interest at 2½ per cent. and redeemable 1944–48, which were issued in April at £99½ per cent., fell at one time to 96, but closed at 99¼.

According to the report of the London Stock Exchange Committee for the year to March 24, 1937, the nominal amount of securities quoted in the Official List was £17,846,746,382, an increase of £322,261,009 over the previous year. During that year, 1,912 applications for permission to deal in new securities were granted, in respect of nominal capital totalling £697,174,206. The question of registration of Stock Exchange dealers was raised in the Board of Trade Committee's report on 'share-pushing', published in August. The committee decided against the restriction of share dealings to Stock Exchange members, on the ground that it was not prepared to recommend the grant of a charter to the Stock Exchange. The proposal to register share dealers, however, would not apply to the members of recognized stock exchanges, who would be exempt. Legislation on the basis of the report is under consideration. (R. E. Bd.)

New York.—Under the new system of governmental regulation of stock exchanges, occasioned by the Securities Exchange Act of 1934, numerous new rules have been adopted annually. During 1937, the many changes effected may be grouped under three main headings, namely: (1) margin requirements, (2) commissions charged, and (3) listing requirements and supervision of members.

Margin Requirements.—During 1937, the New York Stock Exchange adopted regulations (1) to prohibit any member of the Exchange or a partner of any firm 'from assuming for his own account *at any moment* a position in listed stocks through transactions on the Exchange that would make the equity in the account less than 55 per cent. of the long position, plus the usual margin on any short position', and (2) to prohibit any firm 'from assuming for its own account *at any moment* a position in listed stocks . . . which it could not finance' in accordance with governmental regulations. By government action also, following the drastic decline in securities during the year, margin requirements on long accounts were reduced to 45 per cent., and on short accounts were placed at 50 per cent.

Commissions Charged.—On Dec. 29, three changes were approved, to become effective Jan. 3, 1938, namely (1) a new schedule of commissions, increasing non-member commissions by an estimated 11 per cent., and member rates by 5 per cent.; (2) a rule permitting members who also hold membership on another exchange to charge whatever rates of commission may be prescribed by the other market; and (3) a service charge on inactive accounts.

Listing Requirements and Supervision of Various Groups of Members.—Changes in this respect were: (1) a detailed set of instructions to specialists with reference to dealings on the floor of the Exchange in stocks in which they are acting as specialists; (2) an amendment giving the committee on odd lots and specialists authority to supervise the activities upon the floor of members trading in stocks for their own account or otherwise, whereas previously the committee's supervision was limited to odd lots and trading by specialists; (3) revision of the requirements of the committee on stock list 'to include additional protective provisions for mortgages, indentures and deeds of trust and for trustees of bond issues'; and (4) arrangement for a study of secondary distribution by a special committee 'to co-ordinate and develop the policy and rules of the various standing committees in so far as they relate to the question of secondary distribution of listed securities and to trading in listed securities off the floor of the Exchange'.

Stocks and Bonds.—The importance of the New York Stock Exchange as a major national market is shown by the huge volumes of listings of securities. For stocks, on Dec. 1, 1937, such listings aggregated 1,252 separate issues, totalling 1,408,078,066 shares with a market value of $40,716,032,190. Listed bonds, on the same date, represented 1,375 issues, with a par value of $47,175,452,551 and a market value of $42,109,154,661. The number of issuing corporations or governmental units totalled 1,314 for stock issues and 677 for bonds. On Jan. 1, 1937, prior to the severe break in price levels during the later months of the year, the aggregate market value of all listed stocks and bonds stood at $104,931,721,722, of which total stocks represented $59,878,127,946 and bonds of $45,053,593,776. Roughly speaking, the New York Stock Exchange serves as the market-place for approximately a fourth of the nation's total wealth. Of the aforementioned totals, foreign stock listings on Dec. 1 aggregated only 38,401 shares with a market value of $952,899,000, while private and public bonds of foreign nations stood at $4,854,865,000 par value, with a market value of $3,021,037,000.

Sales of stock on the New York Stock Exchange for 1937 totalled 409,468,885 shares, and for bonds $2,792,531,000. For stocks, the ratio of sales to listings amounted to 27·55 per cent. for the first 11 months of the year, the monthly average ratio varying from a minimum of 1·18 per cent. for June to a maximum of 4·30 per cent. for January. For bonds the ratio of sales to listings for the same 11 months amounted to 5·53 per cent., the monthly average varying from ·31 per cent. in August to ·74 per cent. in January. Volume of sales was at a very low ebb during 1937, despite the severe decline in prices, the stock total being only 409 millions as compared with 496 million shares for 1936, and bond sales only $2,792 millions as compared with $3,578 millions for 1936. To an increasing degree during recent years, the security market has become more and more a cash market. Net borrowings of New York Stock Exchange members on collateral, for example, amounted to only 1·69 per cent. of the market value of listed shares on Dec. 1, 1937, whereas at the same date for 1935, 1934, 1930, 1929, and 1928, the ratios were respectively 1·88 per cent., 2·45 per cent., 4·06 per cent., 6·32 per cent., and 9·66 per cent.

With respect to the New York Curb Exchange, sales during 1937 totalled 104,178,804 shares, as compared with 134,843,049 shares for 1936, and bond sales $442,361,000 as compared with $823,050,000 for 1936. In other words, the sales on this exchange, the second largest organized security market in the Western Hemisphere, amounted to about one-fourth the stock sales on the New York Stock Exchange and to about one-sixth of the bond sales. The decrease in stock sales, as compared with 1936, was about the same as that experienced by the Stock Exchange, although the decline in bond sales was considerably greater. At a recent date, 1934, 1,552 different corporations had security issues listed on the New York Curb Exchange. Of these corporations 1,117 had listed 783,582,441 shares, with a par value of $5,661,151,748, as well as millions more shares without a par value. (S. S. H.)

STOCKS AND SHARES. On the London Stock Exchange, 1937 was a year of many vicissitudes. It came at the end of the recovery period, and by the beginning of the year there were many of the signs which commonly occur when recovery is nearing its climax. Already British Government securities were beginning to drop, for they opened in Jan. 1937 at some 3·5 per cent. below their average for the peak year, 1935. This showed that the long-term rate of interest was rising, and that the demand for capital was beginning to catch up with the supply. Meanwhile, there was a strong and partly speculative demand for securities and commodities, influenced to some extent by warnings and suggestions that world rearmament might make heavy inroads upon supplies of certain raw materials. On the other hand, there were indications that certain sections of the Stock Exchange had become top-heavy. Industrials and home rails were already beginning their decline.

British Government securities fell by about 5·5 per cent. during the latter half of the year. Defence borrowing and expenditure, realizations by the banks in order to meet the growing demand for bank loans, and the prevailing uneasiness were the main causes of this decline. They rallied slightly during the latter half of the year, partly because the general market weakness had begun to drive investors out of equities into British Government stocks. The net fall during the year was not quite 4 per cent.

Foreign bonds were dominated by politics. War in Spain and the Far East, uncertainties in Europe, and at the close of the year the suspension of the service on the Brazilian loans did not give this market a good year.

Home rails fell until March, recovered again during the late spring and early summer, and then fell again during the rest of the year. The year's net decrease was about 8 per cent. The autumn increase in rates and fares did not help the market, which paid more attention to the general state of business and to the rising trend of wages and other costs.

Industrials fell steadily until July, rallied slightly in August, and then fell again until early December. The decline was then checked, but for the whole year it amounted to 17 per cent. Political uncertainties, the fall in commodities, the spring gold scare, the setback in the United States, and the moderate autumn recession in British business amply explain the drop in a market which opened the year in a vulnerable condition. In the end prices closed just below their average level for 1935.

Commodity shares, such as rubber, base metals, and oil, followed the general trend. They rose rapidly during the early months of the year, when commodity prices themselves were soaring. They then tumbled down like the rocket's proverbial stick, but with a slight check to the fall in July and August and with another check right at the end of the year. Even so, their latest levels do not compare unfavourably with those of 1934 and 1935.

Gold mines remained firm until the gold scare began in April. They then fell heavily until July, by which time the scare had subsided, and have since registered a moderate recovery. Still their net fall during the year was 14 per cent., and they are now well below their 1934 and 1935 levels.

Thus 1937 has witnessed a definite shake-out on the London Stock Exchange. It was not so serious as the Wall Street break, but movements in the two markets were as usual interconnected. On the whole, the London Stock Exchange displayed fair powers of resistance, and there has been little serious difficulty. But the reaction, though inevitable and easily explained, was severe, and a lot of people who hoped to make money ended by losing it. (N. E. C.)

United States.—On the New York Stock Exchange for all the major classes of stocks the record for March 1937 represented the highest monthly price level since the bottom depression figures of 1932. Optimism was prevalent everywhere, and all stock-market actions seemed to indicate clearly the nation's emergence from the 1930–36 depression. However, near the close of March, security markets began to waver, although for the following five months much resistance to the decline was in evidence, despite the abundance of disconcerting news. With the beginning of August the decline assumed large and rapid proportions, despite surprisingly small dealings. During the next three months, September to November inclusive, the decline took on the proportions of a collapse. In fact, there are few instances on record where a larger percentage decline has been experienced within so short a time. However, following November, the price level was substantially maintained to the end of the year.

The extent of the collapse is indicated by the averages published by the Standard Statistics Company. Thus a representative list of 50 industrial stocks experienced a decline from 163·9 for August, 1937, to 107·8 for November, or 34 per cent. within about three months. The November average price of 107·8 may be compared with 174·6 for March of 1937, the high point of the year, with 129·1 for January, 1936, and with 53·5, the yearly average for 1932, the bottom year of the depression. Twenty representative railroad stocks declined from 55·4 in July to 33·1 for November, or nearly 40½ per cent., the November average (33·1) comparing with 64·8 for March, the high level of the year, with 47·0 for January 1936, and with a yearly average of 26·8 for 1932. Twenty representative utility stocks slumped from 81·7 in July to 63·3 for November, or 23 per cent., the November average comparing with 100·9 for January, the high level of the year, with 88·4 for January of 1936, and with a yearly average of 85·7 for 1932. Similarly, a representative list of seven copper and brass stocks underwent a decline, during the period from August to November, from 232·8 to 115·4, or 50 per cent., the latter monthly quotation comparing with 254·0 for March of 1937, and with 113·4 for January of 1936.

To many people the unfortunate decline in stock market values seemed unaccountable. The liquidation of the previous six years, along practically all business lines, had been so drastic and the abundance of funds so great and so cheap (call and time loans averaging constantly in New York at 1 per cent. and 1½ per cent.) that it was difficult to construe fundamentals as other than highly favourable to a long-continued bull market. But internal troubles, such as labour upheavals, increased taxation, the inability to balance the National Budget, together with war and the prospects of war which filled the newspapers continually throughout the year, with respect to nearly all the leading nations of Europe and Asia, destroyed the confidence of the investment and speculative community. (For number, volume, and amount of stocks, see STOCK EXCHANGE: *New York*.) (S. S. H.)

STRAITS SETTLEMENTS, THE, population (1931) 1,114,015; area 1,531sq.m., one of the three main subdivisions of British Malaya, the others being the Federated and Unfederated Malay States (*q.v.*). It includes the two main ports of Malaya, Singapore and Penang. Its subdivisions are as follows: Singapore, including the Cocos and Christmas Island; Penang, including Province Wellesley; Malacca; and Labuan. It is administered by a governor with an advisory council (governor, Sir Thomas Shenton Whitelegge Thomas). Chinese predominate in the mixed population of the colony, with Malays second and Indians third. Singapore (*q.v.*) and Penang are the outlets for the rich Malayan hinterland, and carry on an important export trade in tin and rubber. The unit of currency is the Straits Dollar (= 2*s.* 4*d.*).

STRATHCARRON, IAN MACPHERSON, 1st Baron, of Banchor, British lawyer and politician; born at Newtonmore, Inverness, Scotland, in 1880; died in London, Aug. 14, 1937. Ian Macpherson was educated at George Watson's College and Edinburgh University, and was called to the bar in Edinburgh. After failing to secure parliamentary election at the two 1910 general elections, he was returned for Ross and Cromarty in 1911 and sat for that constituency as a Liberal until 1931, and as a Liberal-National from 1931 to 1935. He was Under-Secretary of State for War, 1916–19; Chief Secretary for Ireland, 1918–20; and Minister of Pensions, 1920–22. He was made a P.C. in 1918, was created a baronet in 1933, and was raised to the peerage in 1936. He took silk in 1919, and was Recorder of Southend from 1931 till his death. Lord Strathcarron married, in 1915, Jill, daughter of Sir George Rhodes, Bt., and is survived by two daughters and a son, the 2nd Baron. Lord Strathcarron, besides being a memorable parliamentarian and a skilful barrister, was a brilliant Gaelic scholar. His publications include *Life at a Scottish University*; *Satire in Celtic Literature*; *The Land Question.*

STRATOSPHERE, THE. To that part of the earth's atmosphere which is bounded beneath by the Troposphere, above by the Ionosphere, and thus lies at an altitude of 12 to 30km. (7·5 to 18·6 miles) Teisserenc de Bort has given the name of Stratosphere. Whereas the Troposphere is chiefly characterized by vertical movements of the air and the resultant temperature variations and precipitations, in the Stratosphere only slight vertical air-movements occur; consequently, only slight variations of temperature and no clouds or precipitations.

Limits and Temperatures. The downward limit of the Stratosphere is characterized by the fact that the temperature, which in the Troposphere decreases more or less in direct proportion to the increase in altitude, suddenly becomes constant at a very sharply defined (not always the same) altitude. The altitude of this limit is subject to strongly marked fluctuations, depending on weather, time of year, and latitude. In the tropics it is at an altitude of 16 km. (10 miles). In temperate latitudes at an average of 12 km. (7·5 miles), though in exceptional cases it may fall to 5 or 6 km. (3 or 4 miles), even in temperate latitudes. In summer it is usually at a greater altitude than in winter.

Fox Photos]

FLIGHT-LIEUT. ADAM, WHO BROKE THE WORLD ALTITUDE RECORD BY REACHING A HEIGHT OF 53,937 FEET IN JUNE 1937, BEING FITTED WITH HIS SPECIALLY CONSTRUCTED OXYGEN SUIT

In arctic regions the limit is at a lower altitude, about 8–10 km. (5–6 miles). In the language of air-travel, these fluctuations are ignored, and everything above 12 km. (7·5 miles) is spoken of as the Stratosphere. The lowest part of the Stratosphere has the same temperature (whatever that may be at the time) as the uppermost layer of the Troposphere. The higher the limit, the lower the temperature. Accordingly, we find the lowest natural terrestrial temperatures in the tropics—about 75° below zero C. (135° below freezing-point F.). In temperate latitudes the temperature of the Stratosphere comes to about 55° below zero C. (99° below freezing-point F.: lower in summer than in winter!), and in arctic regions to about 45° below zero C. (81° below freezing-point F.). As one goes higher in the Stratosphere, one finds a very gradual increase of temperature. Up to 30 km. (18·6 miles), the increase reaches 5°–10° C. (9°–18° F.).

Air-movement.—The movement of the air is horizontal and very even. The wind-velocity is usually highest at the lowest levels of the Stratosphere and the highest levels of the Troposphere; but even in the upper layers of the Stratosphere, storms at 200 km. an hour (125m.p.h.) have been observed.

Composition of the Stratosphere.—If there were no vertical air-movements at all in the Stratosphere, after a very long time the composition of the Stratosphere would change in such a way that the lighter constituents of the atmosphere would increase in proportion to the heavier. We should find a higher proportion of helium and nitrogen, a smaller proportion of oxygen. But the slight vertical movements are sufficient to avert such a separation of constituents, or at any rate to keep it within such narrow limits that it is difficult to detect it by analysis and is certainly without any practical importance whatever in connexion with air-travel. Strangely enough the carbon-dioxide content is much greater in the Stratosphere than in the Troposphere.

The Aqueous Content of the Stratosphere is interesting, and is of the greatest importance in connexion with air-travel. As the tension of saturated water-vapour at 50° below zero C. (90° below freezing-point F.) is very slight, it was supposed at one time that the Stratosphere must be very dry. This view was supported by the fact that in the Stratosphere clouds are practically never observed. But more recent investigations have shown that there are parts of the Stratosphere which contain quite considerable quantities of supersaturated water-vapour. (Analysis of air-samples has established supersaturation-factors of more than 10.) This supersaturation is possible only when the air is completely free from dust (the air must therefore have been previously freed from dust by cloud-formation at a high temperature). When dust makes its way into these super-saturated regions, clouds of frozen vapour are formed, and in certain cases, for example after volcanic eruptions or violent explosions, the precipitation reaches the earth as rain. Aeroplanes with the smoke from their engines can start long cirrus-clouds. On aeroplane-flights there is produced at the same time a deposit of ice, which so alters the shape of the wings and encumbers the aeroplane that flying becomes impossible. This danger is greatest in the uppermost layer of the Troposphere and the lowest layer of the Stratosphere. As the altitude increases, the danger rapidly diminishes.

Air-pressure in the Stratosphere diminishes continuously as the altitude increases, according to the well-known barometrical formula; in fact, owing to the low temperature, it halves itself every 4·4km. (2·7 miles). Measured barometrically it is 140mm. (5·5in.), at an altitude of 12km. (7·5 miles); at an altitude of 16km. (10 miles), 76mm. (3in.) = $\frac{1}{10}$ atm.; at 20km. (12·5 miles), 40mm. (1·6in.), and at 31km. (19·3 miles), 7·6mm. (·3in.) = $\frac{1}{100}$ atm. Consequently, although the Stratosphere is far more extensive than the Troposphere, its mass is only 17 per cent. of the atmosphere, against the Troposphere's 82 per cent. and the Ionosphere's 1 per cent.

The Stratosphere as Medium for Transport.—At great altitudes, an aeroplane, on account of the diminished density of the air, must fly faster than at sea-level to maintain lifting-power. But since, for the same reason, the air-resistance is less, an aeroplane can maintain a high speed with less power than at lower altitudes. Consequently, air-liners tend to fly higher and higher. There is reason to suppose that there will be progressive development on these lines, and that the air-liner of the future, on routine flights will normally, for long distances, aim at altitudes of about 16km. (10 miles), and that at these altitudes speeds of 700 to 800km. an hour (400 to 500m.p.h.) will have to be regarded as normal rates of travel. Of course, at such altitudes pilots and passengers must be enclosed in air-tight pressure-resisting cabins, because even with oxygen-apparatus human beings cannot live at so low a pressure as $\frac{1}{10}$ atm. By means of a pump, air in the cabin is maintained at normal pressure and constantly renewed. Consequently, the passengers are not affected by the great altitude. Travel will be not only more rapid than in the Troposphere, but much pleasanter for the passengers, because the weather will be constantly fine, and no vertical winds (air-pockets, as they are called) will jolt the aeroplane.

(A. Pi.)

STRIKES AND LOCK-OUTS. The United States, Canada, and Great Britain publish current statistics of strikes and lock-outs, their causes and results, together with detailed reports upon the more important strikes of each year. Most of the other nations report them less regularly; some not at all. The Canadian Department of Labour published a report on strikes throughout the world in the *Labour Gazette*, March 1937. The most recent statistics then available ended in 1935 for the following countries: Finland, Denmark, Sweden, the Netherlands, Poland, Czechoslovakia, Estonia, Hungary, the Irish Free State, Uruguay, Union of South Africa, and British India; in 1934 for France, Latvia, Yugoslavia, Rumania, and Spain; in 1933 for Germany, Japan, and Mexico; and in 1925 for Italy. The present study of labour disputes in 1937 will therefore be confined to the three countries first mentioned.

The United States was 'the strike capital' of the world in 1937. Great Britain and Canada had more strikes than in 1936, but the number and severity were moderate compared with a number of earlier years. Labour disputes in France were a less prominent characteristic of the national life than in 1936. The political situation in Germany, Italy, Russia, and Japan have made it 'inadvisable' for wage-earners to undertake strikes.

In the United States during 1937, a total of 4,584 strikes were begun, involving 1,919,812 workers, and lasting in the aggregate 28,425,112 man-days. Of these strikes 1,290 were caused by disputes over wages and hours, 2,700 were concerned with matters of union organization, and 510 were due to other causes. Though the number of strikes in 1937 exceeded those in 1919, the number of workers involved was far less. In the latter year 4,160,348 were out in 2,665 strikes, for which such data are available.

Keystone]

POLICE USING TEAR GAS ON STEEL STRIKERS DURING STRIKE IN CHICAGO (JUNE, 1937)

Keystone]

STAY-IN STRIKE AT FLINT, MICHIGAN, FEB. 1937. RIOTERS SMASHING WINDOWS AMIDST THE BURSTING OF TEAR-GAS BOMBS

The number of strikers was inflated in 1919 by the 'great strikes' of the period—such as those in the coal-mines, steel and textile mills, telephone industry of New England, the general strike at Seattle, the widespread struggles of clothing workers, longshoremen, the printing trades. In 1937, while there were definite points of concentration, such as the automobile and maritime industries, the year was characterized by labour activity 'on all fronts', including retail trade, hotels, restaurants, and other service industries not affected by strikes in previous years, and a large part of the strikes involved relatively small numbers of people.

The industry most affected in 1937 was automobiles. Strike activity became significant in the automobile industry as early as 1934 and the tide of conflict reached its peak during the early spring of 1937 in the General Motors, Hudson, and Chrysler strikes, all of which ended in union recognition and agreements. Forty-eight thousand automobile workers went out in the General Motors strike at the beginning of the year, tying up operations in 50 plants in 25 cities and stopping the employment of 126,000 workers. Throughout the year there were numerous 'illegal' strikes by workers under these agreements, many of them short stay-in strikes, and in November strikes again broke out at General Motors and the Hudson Motor Company, chiefly over impatience and suspicion concerning the renewal of the agreement. During the latter part of the year, the United Automobile Workers staged several strikes at St. Louis and Kansas City against the Ford Motor Company, but up to the end of 1937 did not attempt a major strike against the Ford Company.

The Pacific coast maritime strike, which lasted 98 days and ended on Feb. 4, 1937, involved directly 37,000 workers, and many thousands indirectly. In contrast to the maritime strike of 1934, there was practically no violence. Each side appealed to public opinion by press and radio, and leaders of the opposing parties engaged in public debates before large audiences. The strike arose from difficulties connected with the revision and renewal of agreements which expired Sept. 30, 1936.

Other large strikes in 1937 were those in the leading 'independent' steel mills (Bethlehem, Inland, Republic, Youngstown Sheet and Tube), which started in May and gradually died out; a strike in the silk and rayon industry during the summer, which resulted in agreements similar to those of the men's and women's clothing industries; several strikes in the rubber industry at Akron, Ohio; and the bitter strike in the properties of the Remington-Rand Company in New York, Ohio, and Connecticut.

Stay-in strikes, while numerous, were not as important a part of the American strike picture in 1937 as they were in 1936. States began to enact legislation designed to prevent stay-in strikes. In Tennessee, for instance, employees are required to withdraw from the premises of the employer within 12 hours 'of the date of such cessation of employment' (Tennessee Public Acts 1937, Chapter 160). Vermont passed a similar law. The United States Supreme Court refused to review a stay-in strike decision appealed against by strikers of the Apex Hosiery Company, Philadelphia. That is the nearest that the legality of stay-in strikes got to decision by the Supreme Court. Many lower courts have held that stay-in strikes exceed the legal rights of strikers.

There were one-day general strikes at Lansing, Mich., June 7, to protest against the arrest of pickets for alleged violation of an injunction, and at Niles and Warren, Ohio, on June 23, in protest against the passage of non-strikers into and out of the plants under protection of the National Guard.

Comparatively few strikes resulted from the bitter conflict between the American Federation of Labor and the Committee for Industrial Organization. Here and there, as among the warehouse workers of San Francisco and the lumber and sawmill strike in Oregon, the split in the ranks of labour resulted in strikes, but the activity of the National Labor Relations Board and State boards, such as the Wisconsin Labor Relations Board, in the adjustment of conflicts between the two labour groups prevented these conflicts (in most instances) from ending in strikes.

Fox Photos]

POLICE CONTROLLING THE BOARDING OF TRAMS AT ALDGATE, LONDON, DURING THE BUS STRIKE IN MAY 1937

TABLE I

LABOUR DISPUTES IN GREAT BRITAIN DURING 1937
(From *The Ministry of Labour Gazette*, January, 1938)

Industry Group	Number of disputes beginning in 1937	Number of workpeople involved in all disputes in progress	Aggregate duration in working days of all disputes in progress
Fishing and Agriculture .	6	1,700	19,000
Coal-mining . . .	457	390,600 *	1,499,000
Other Mining and Quarrying	14	1,200	7,000
Brick, Pottery, Glass, Chemical, etc. . .	37	2,500	19,000
Engineering and Shipbuilding . . .	123	91,300	693,000
Iron and Steel and other Metal . . .	97	16,700	85,000
Textile . . .	84	23,200	156,000
Clothing . . .	33	10,000	72,000
Food, Drink, and Tobacco	18	2,000	6,000
Woodworking, Furniture, etc.	59	2,800	31,000
Paper, Printing, etc. .	10	1,400	7,000
Building, Public Works Contracting, etc. .	91	7,400	38,000
Transport . . .	50	52,600	748,000
Commerce, Distribution, and Finance . .	12	1,000	10,000
All other Industries .	31	3,500	27,000
Total . .	1,122	607,900 *	3,417,000

* Workpeople are counted as many times as they were involved in a dispute during the year. The resulting duplication is slight, except in the coal-mining industry, in which the *net* number involved was approximately 211,000 in 1937. The *net* number involved in all industries in 1937 was approximately 418,000.

The monthly reports on strikes issued by the United States Bureau of Labor Statistics indicate that half or more of the strikes of 1937 involved some question of union recognition, with wages the other major issue. It was a year of offensive strikes—strikes to compel union recognition, for wage increases, for shorter hours, and other positive gains. But a small percentage of the strikers were definitely defensive, though many short strikes were occasioned by what workers believed to be employers' infractions of agreements. On the whole, labour fared well in efforts to improve its status. In June, for instance, 45 per cent. of the settlements resulted in substantial gains; and 32 per cent. more in compromises.

TABLE II

CAUSES OF LABOUR DISPUTES IN GREAT BRITAIN, 1937, BY MONTHS

Cause	J	F	M	A	M	J	J	A	S	O	N	D
Demands for wage increases	19	16	14	35	26	23	21	37	38	36	30	6
Resistance to wage reductions . .	3	2	—	—	—	—	—	3	—	—	—	—
Other wage questions .	18	17	13	24	31	20	12	34	20	23	25	11
Hours . .	4	3	—	6	2	4	2	8	3	2	2	1
Employment of particular classes of people or individuals .	15	16	15	25	17	21	19	22	21	22	16	15
Other working arrangements.	5	7	6	10	6	8	5	12	4	24	8	3
Questions in solving trade union principles	5	11	4	15	7	8	5	13	16	16	7	3
Sympathetic strikes . .	1	3	1	3	1	—	—	1	1	1	3	1
Demand for withdrawal of summons to individuals for breach of contract . .	—	—	—	—	—	—	—	4	—	2	—	—

Compiled from *The Ministry of Labour Gazette*, Feb. 1937–Jan. 1938.

TABLE III

RESULTS OF LABOUR DISPUTES SETTLED DURING EACH MONTH OF 1937

Results of Strikes	J	F	M	A	M	J	J	A	S	O	N	D
Settled in favour of labour	6	11	8	22	23	19	15	23	15	24	19	12
Settled in favour of employers . .	33	25	21	39	48	37	33	57	48	50	46	12
Settled by compromises .	24	18	18	29	21	19	18	27	23	33	23	13
Negotiations pending, but work resumed	8	8	12	10	3	6	10	13	16	16	12	9

Compiled from *The Ministry of Labour Gazette*, Feb. 1937–Jan. 1938.

Labour disputes in Great Britain in 1937 are shown in Table I. It will be observed that the number of strikes and number of workers involved was small compared with the situation in the United States, even when the difference in the sizes of the populations is considered. The most important areas of increased conflict were coal-mining, engineering and shipbuilding, textiles, food manufactures, and the transport industries, while the distributive trades and clothing manufacturers showed sharp decreases both in the number of strikers and man-days lost.

The 1,122 strikes in 1937 may be compared with 1,607 in 1920, 323 in 1926, 471 in 1934, and 818 in 1936.

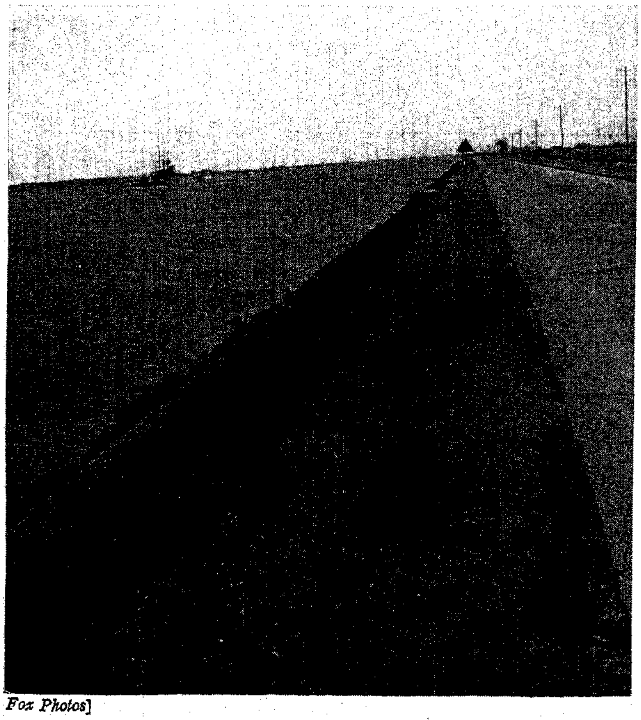
Tables II and III show the causes of labour disputes and their results during 1937. Two contrasts with the United States situation stand out—in Table II the absence of ' union recognition ' unless included in ' questions involving trade union principles ', and in Table III the large percentage of the strikes which ended definitely in favour of the employers.

Strikes in the Yorkshire coalfield affected the largest number of workers, 95,000 of whom were idle with an aggregate loss of 400,000 working days. A one-day strike in November involved 25,000 Lanarkshire coal-miners. Following a national delegate conference on April 30, the president of the Mineworkers Federation of Great Britain announced that a national coal strike was to begin on May 22 in protest against the alleged victimization of members of the Federation at Haworth (Notts.). The threatened strike was, however, called off by the delegate conference of the Federation on May 27. The strike in May of London omnibus men over a question of working hours affected 24,000 employees, and resulted in a loss of 565,000 working days.

Canada reported 342 strikes during the first 11 months of 1937, involving 69,827 workers and the loss of 804,469 man-days. In 1936 there were but 156 strikes, with 34,812 strikers and 276,997 days lost; a rather typical strike record for Canada. But in 1921, 1922, 1924, and 1925, over a million days were lost each year on account of strikes, and in 1919 over 3,400,000 days in 336 strikes. The year 1937 ranks among the worst years so far as number of strikes is concerned, but, like the United States and Great Britain, Canada had a large number of small strikes, resulting in only a moderate loss of working time. (D. D. L.)

SUDAN: *see* ANGLO-EGYPTIAN SUDAN; FRENCH WEST AFRICA AND THE SAHARA.

SUEZ CANAL, THE. Between Jan. 1 and Dec. 20, 1937, 6,431 ships of a total tonnage of 27,822,000 tons passed through the Canal, as compared with 5,685 ships of a total tonnage of 21,531,000 in 1936. The total dues paid amounted to £10,492,300, or £452,800 less than during the corresponding period of the previous year. A factor in this decrease in total dues was the reduction made, as from April 1, 1937, in dues for laden vessels to 6*s.* per ton, for vessels in ballast to 3*s.* per ton, and for passengers to 6*s.* per head, children under 12 being taken at half-price.


Fox Photos]
GENERAL VIEW OF THE SUEZ CANAL

The arrangement made with the Compagnie Universelle du Canal Maritime de Suez in May 1936 by the then President of the Egyptian Council of Ministers, Aly Maher Pasha, was replaced on June 14, 1937, by a new agreement signed by Makram Ebeid Pasha, Minister of Finance. This provided for a royalty to be paid by the company to the Egyptian Government of £E.300,000 annually, payable in quarterly instalments; for the proportion of Egyptian-born subjects to be engaged by the company in the Administration to be 33 per cent. of the total strength of the purely administrative staff; and for the company to undertake to construct, at its own expense, up to a maximum cost of £E.300,000, the military road in the Isthmus of Suez prescribed under the Anglo-Egyptian treaty. In addition it was agreed that two seats on the board of directors, instead of the one so far provided, should be reserved for Egyptians, and that, if at any time the total number of directors was increased, one of the new seats should be held by an Egyptian. (A. MN.)

SUGAR. World production and distribution of sugar in 1937 pivoted on the international agreement in London in May, when plans were formulated for international co-operative regulation of production and distribution in 21 countries. The agreement became provisionally effective Sept. 1, subject to acceptance by various countries. It allots quotas and is designed to run five years. Total world production of sugar, raw values, for the 1937–38 crop year is estimated by the International Association for Sugar Statistics and F. O. Licht as 29,691,544 metric tons. In this estimate, cane sugar totalled 18,898,500 metric tons; the remainder being raw beet sugar, of which the estimate for Europe is 10,479,889 short tons, and for Canada and the United States 1,529,000 short tons. (X.)

Beets and Beet Sugar.—Sugar beet has now reached such a high level of importance in British agriculture that it is regarded as the pivotal crop for intensive cultivation. During the year ending June 1937, the total quantities of sugar manufactured from home-grown beet amounted to 537,569 tons.

A decade has passed since that experimental year in which farmers saw the possibilities of beet, and optimists had high hopes of Great Britain being able to produce most of her own sugar. Much has been accomplished, but in 1937 there were still less than 20 factories, producing only a quarter of the home consumption of sugar, while there had been a setback in the number of acres under cultivation, from 348,700 in 1936 to 306,600. This was effected by several causes, including the beet price, the labour situation, and the attractiveness of alternative crops. Japan and the Irish Free State had doubled their acreage in 1937, that of Yugoslavia had fallen by nearly half, and Great Britain's was 9 per cent. less than the average of the previous four years.

Government Support.—Considerable assistance is rendered to the British Sugar Beet Industry by the government. The formation of the British Sugar Corporation Ltd., in the spring of 1936, with a capital of £5,000,000, under the Sugar Industry (Reorganization) Act, 1936, has proved, so far, to be one of the most progressive moves made in the industry. It operates in close collaboration with the National Farmers' Union Beet Sugar Committee, which is responsible for the supervision of the growers' interests at the factories. Contract prices are fixed between the British Sugar Corporation and the representatives of the beet growers in consultation with the Sugar Commission. Its first year's trading shows a profit of £1,245,143, and a dividend of 4 per cent. Thus, a struggling industry, hitherto working at a loss, is converted into a profitable undertaking.

The Corporation's enterprise was evident at the Royal Agricultural Show at Wolverhampton, where large numbers of beet growers and members of the public were attracted to demonstrations of each process in sugar manufacture. Hitherto work of this nature had been undertaken by the Beet Sugar Factories Committee.

At the International Sugar Conference held in 1937, the government took steps to ensure that Great Britain's quota of production was maintained at 560,000 tons of white sugar per annum. During the year an International Agreement regarding the regulation of the production and marketing of sugar was ratified by the governments of Great Britain, Australia, Germany, Peru, Portugal, Hungary, and Haiti. In Great Britain a Sugar Marketing Scheme is under consideration. The promoters have submitted this to the minister of agriculture, but further progress is held up pending a discussion in Parliament.

Mechanization.—The movement of labour from the land to industrial centres is affecting beet cultivation. Thus, owing to labour shortage, there is not only a falling off of land under cultivation, but, as the cost of labour increases, farmers are investing in more machinery. In the United States the same trend is inducing the expert to experiment with mechanization. An extensive experiment with 'blocked' versus 'singled' beets is now being carried out. The beets are spaced in the row with long-handled 7-inch hoes, with no hand singling, and a number of beets are left in each 'block'. Machines do the blocking. Available figures show the experiment to be quite successful.

Seed Requirements.—The United States are now producing nearly half their seed requirements. The western States are the principal producers. California, Arizona, Utah, New Mexico, and Nevada produced 7,500,000lb. in 1936, and the 1937 crop was expected to be still larger.

Following large capital outlays, great strides have been made in the eastern counties of England in producing home-grown seed. At Sleaford, Boston, King's Lynn, Kesteven, and the rich fenlands of Lincolnshire and Norfolk, sufficient seed is now produced to satisfy local factories' requirements. Hitherto the bulk of the seed was produced in Holland and Germany. Some of the new machines installed are of German type adapted to English needs. The largest producers of sugar beet in the world are Zuckerfabric, Klein, Wanzleben, Germany.

Research and Education.—The Cambridge School of Agriculture and the Norfolk Agricultural Station have rendered valuable service in experiments with the sugar beet by-products. Their aim has been to prove the nutritive value of these in feeding cattle, sheep, and pigs. Beet pulp, molasses, and beet tops (fresh and dry) have proved a very beneficial food.

Several experimental stations are carrying out careful experiments with various fertilizers: lime, phosphate, potash, boran, and basic slag are the principal. Intelligent manuring is receiving close investigation by experts and chemists, and is decidedly improving the product both per acre and per content of sugar. The government helps producers in purchasing lime and basic slag for maintaining and restoring the fertility of the land. In September the government's Land Fertility scheme came into operation under the auspices of the Land Fertility Committee.

The ministry of agriculture has for some years organized regional prize competitions to foster improvements in production. Points are awarded for preparatory cultivation, manuring, date of sowing, cleanliness of soil, condition of tilth, width of rows, width between plants, and efficiency in gapping, efficiency in singling, root development, etc. In 1937 the Sugar Commission introduced a new scheme to give growers in poor soils an equal chance with others more fortunately situated.

Research and education are now definitely an obligation. A temporary research committee has been formed with the aim of getting a central institute, and the ministry of agriculture has authorized instructional courses at Farm Institutes. Through all these efforts the future outlook for the sugar beet industry in Great Britain is indeed promising.

Statistics.—The British Sugar Corporation, Ltd., official figures for 1936 are: England and Scotland, Sugar beet—3,448,000 tons; Beet sugar—537,000 tons. (F. R. G.)

Estimates for beet sugar (raw) for 1937–38 as issued by the International Institute of Agriculture for the leading countries give Russia 2,800,000 short tons, Germany 2,330,400 short tons, United States 1,468,000 short tons, France 1,004,700 short tons, Czechoslovakia 817,989 short tons, Poland 610,000 short tons, and the United Kingdom 526,000 short tons.

Cane Sugar.—Estimates for cane-sugar production for 1937–38 in different countries were given by the International Association for Sugar Statistics and F. O. Licht as follows: British India, 2,100,000 metric tons (gur), and 1,275,000 metric tons white sugar. Cuba, 3,146,000 metric tons. Java, 1,420,000 metric tons. Japan (Formosa), 1,278,000 metric tons. Philippine Islands, 1,010,000 metric tons. Brazil, 985,000 metric tons. Hawaii, 965,000 metric tons. Porto Rico, 875,000 metric tons. Australia, 752,000 metric tons. South Africa, 472,000 metric tons, and the British West Indies, 471,000 metric tons.

SUICIDE STATISTICS. As a rule, the official figures of suicides lag behind the truth. Quite often the families succeed in having a suicide registered as an accident, while

SUICIDES PER 1,000,000 INHABITANTS (*Male, Female, Total*), 1920–36

Years	England			Scotland	Northern Ireland	Irish Free State	France	Germany	Austria	United States
	M	F	Total*	Total	Total	Total	Total	Total	Total	Total
1920	135	51	91	49	27	20	175	213	218	102
1921	153	50	99	56	47	25	196	206	204	125
1922	155	53	102	56	45	22	—	219	235	118
1923	157	53	103	67	40	25	—	214	278	115
1924	142	54	96	74	54	32	—	231	309	121
1925	153	61	105	76	60	30	193	245	321	121
1926	166	66	114	87	50	33	192	262	341	128
1927	184	71	125	103	64	32	193	253	327	133
1928	180	72	124	97	51	33	189	252	370	136
1929	183	73	126	97	57	38	184	261	363	140
1930	185	74	127	101	49	28	190	278	388	157
1931	189	73	129	102	50	37	190	283	412	168
1932	210	81	143	102	56	37	206	292	441	174
1933	201	84	140	106	55	35	200	287	423	159
1934	198	81	137	106	52	35	—	287	391	149
1935	181	80	129	94	40	31	—	275	—	143
1936	176	77	124	100	39	—	—	—	—	—

* Taking into account unequal proportions of male and female total inhabitants.

only rather few homicides are recorded as suicides. The frequency of suicide varies enormously from country to country. It is over 10 times as great in Austria as in the Irish Free State. It increased in most countries for which data are available in the 75 years preceding the World War, dropped considerably during the War, but rose again soon after. No marked tendency has been noticeable in the course of the last 15 years. The apparent increase has been largely due to changes in the age composition, which have lowered the proportion of children and raised the proportion of old people.

Suicide rates of males usually rise in times of business depression and decline during prosperity. (R. R. K.)

SUMATRA, which lies north-west of Java and is, along its north-western coast, closely adjacent to the Malay peninsula, is after Java the most important, and after Borneo the largest, of the Sunda islands. Its area is 163,145sq.m.; population (1930) 8,238,570. It is almost bisected by the Equator, lying between 5° 4′ N. and 5° 59′ S. It contains a long mountain range called the Bukit Barisan ('array of mountains'), of which Mount Indrapura has an elevation of 13,700ft. and Mount Ophir of 10,483ft. The range faces the Indian Ocean and descends towards the east into a broad plain, which is covered by immense forests and moors. There is a long line of volcanic peaks, of which the most famous is Krakatoa, in Sunda strait. Sumatra is less advanced and less economically developed than Java, but enjoys the same rights of representation in the Volksraad. The island possesses both agricultural and mineral resources. Native agricultural production is mainly devoted to rice cultivation, although Sumatra is not self-sufficient in rice and depends to some extent on imports from abroad. Rubber and coffee are the main products of the European plantations. Government coal mines in Sumatra yielded an output of about 830,000 tons in 1928. The output of crude oil in the same year was about 880,000 tons. Limited amounts of gold and silver are also mined. (W. H. Ch.)

SUNDAY SCHOOLS. The world's Sunday school convention at Oslo, 1936, reported 369,510 Sunday schools in 129 countries, with 3,145,895 teachers and 34,139,624 scholars. This represents an increase in four years of 2·75 per cent., considerably less than in previous quadrennia. Africa and South America showed large increases; Europe a small decrease. In Sept. 1937, it was reported that the Methodist Episcopal Church in the U.S.A. had suffered a decrease since 1925 of 6,764 Sunday schools and 902,529 teachers and scholars. Decline in adult classes, growth of other forms of organization for the religious education of youth, competition of varied interests and allurements in a materialistic age, and falling birth-rate, are reasons cited. In Japan, a decrease is reported due to the growth of militarism and the requirement of worship at national shrines. Dissent from the latter policy brought punishment upon some Sunday-school leaders and Christian educators in Korea. Sunday schools are forbidden by law in Russia; and in Turkey they may be conducted as 'children's worship services' only.

In Great Britain advances were made in the grading of Sunday schools and in closer co-operation between Sunday schools and elementary day schools. In India native leaders were placed in charge of teacher-training and of a new religious education department of the National Christian Council. The first general Sunday school convention for the Bantu people was held in South Africa. Sunday school work made progress, with the approval and co-operation of ecclesiastical authorities, in the Armenian Church, the Coptic Church, and the Greek Orthodox Church. A nation-wide movement in China for the training of voluntary lay Church workers, initiated by the National Committee for Christian Religious Education, got well under way before the invasion of China by Japan.

In spite of its world-wide spread and its adoption by other than Christian faiths, notably the Buddhists of Japan, the Sunday-school movement is still strongest among English-speaking peoples.

SUPREME COURT OF THE UNITED STATES. In a special message to Congress on Feb. 5, 1937, President Roosevelt started a political controversy, which for unremitting bitterness dwarfed all others of the year in the United States. An earlier hint of his intention to try legislative means for coping with the troublesome problem of judicial veto had stimulated members of the two houses to present various partial remedies. But in the February message, Mr. Roosevelt called for a root and branch reform and a general revitalizing of the courts. He submitted the draft of a bill which provided:

(1) For the voluntary retirement of Supreme Court justices at the age of 70 on full pay, and the appointment of an additional justice for every eligible justice who failed to take advantage of his privilege to retire, saving that the total membership of the court should never exceed 15.

(2) For the appointment on similar grounds of additional circuit and district judges.

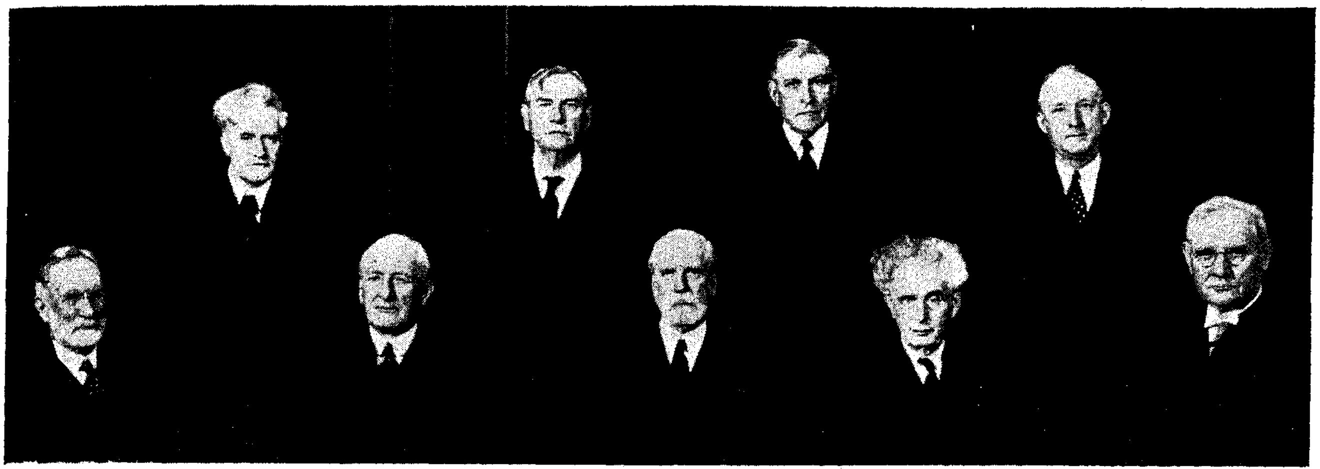
(3) For direct appeals from district courts to the Supreme Court on all constitutional issues.

(4) For the restraint of lower courts from issuing any injunction against the enforcement of a federal law without sufficient notice to the Department of Justice, so that a competent defence could be prepared.

These points were not new or inherently objectionable. The procedural reforms had often been urged by members of the legal profession. And the desirability of creating inducements for aged judges to leave the bench was generally recognized. Even the conservative Justice McReynolds had, as attorney-general in 1913, recommended the enactment of a law substantially embodying the second point above enumerated. And Mr. Hughes had in 1928 spoken deprecatingly of superannuated judges who 'seem to be tenacious of the appearance of adequacy'—a sentence aptly quoted by Mr. Roosevelt in his message.

The objection was not to the proposed changes in themselves, but to their obviously intended use as a means of altering the political composition of the Supreme Court. The sudden addition of six new justices within a year after the Court had rendered 11 decisions against the Administration's basic programme, appeared to the eyes of Conservatives as an assault upon the independence of the judiciary. And many professed Liberals expressed alarm lest the precedent be used against them in the future.

The attitude of Republicans as a party was expressed in the instant denunciation of the bill by Herbert Hoover, Alfred Landon, and John Hamilton. The Democrats were divided. The press stood predominantly with the opposition. A test poll showed that only a minority of the senate heartily favoured the measure, but that party discipline would probably suffice to secure its passage. Public hearings before the senate judiciary committee began on March 10 and lasted through April 23. Moderate leaders in Congress pressed for an early passage of the pending Sumners-McCarran bill, which provided merely for voluntary retirement of Supreme Court justices over



Wide World Photos]

WASHINGTON: MEMBERS OF THE UNITED STATES SUPREME COURT. LEFT TO RIGHT: FRONT ROW, JUSTICES GEORGE SUTHERLAND AND JAMES CLARK MCREYNOLDS; CHIEF JUSTICE CHARLES EVANS HUGHES; JUSTICES LOUIS D. BRANDEIS AND PIERCE BUTLER. BACK ROW: JUSTICES BENJAMIN N. CARDOZA, HARLAN F. STONE, OWEN J. ROBERTS, AND HUGO L. BLACK

70 years of age. It was their hope that this would tempt one or more conservative members of the tribunal to step down and thereby remove the urgency for a more drastic act. This measure did quickly pass both Houses, and was signed by the President on March 1. At the same time, a visible shift in the Court's position towards progressive legislation—notably in its decisions upholding the Washington minimum wage law (March 29) and the Wagner Labor Relations Act (April 13)—strengthened the opposition. So also did the letter addressed by Chief Justice Hughes to Senator Wheeler denying that the Court was behind its calendar and stating that additional members would rather lessen than increase its efficiency.

It was clear by the end of April that the senate committee would report against the bill, although its actual vote to do so was not taken until May 18, the same day on which Associate Justice Van Devanter announced his intention to retire. Whether the timing of these two events was pure coincidence or not, its effect was further to weaken support of the bill. On July 2, a substitute measure known as the Hatch amendment was introduced on the senate floor, and this at first seemed likely to command a majority vote. But as the debate dragged on, support for it dwindled. The sudden death on July 14 of its sponsor, Mr. Robinson, removed the last vestige of hope for its adoption. Further concessions from the Administration proved unavailing. Finally, on July 22, through the good offices of Vice-President Garner, an agreement was reached which resulted a few weeks later in the enactment of a law providing for certain reforms in the lower courts without reference to the Supreme Court.

This ended for 1937 the main phase of the judiciary struggle. There followed immediately a new controversy over the question, who should fill the place vacated by Mr. Van Devanter. A strong movement in the senate favouring Mr. Robinson had been defeated by his death; and no new preference by that body had crystallized before Aug. 13, when the President submitted the name of the aggressive New Deal senator, Hugo L. Black. In the debate which ensued, opposing senators emphasized particularly what they deemed to be constitutional objections. But Senator Copeland dwelt more insistently upon the charge that Mr. Black owed his seat in the senate to the Ku Klux Klan. In spite of this, the nomination was approved, Aug. 17, by a vote of 63 to 16.

Public discussion of the subject was reopened in September through the syndicated publication of a series of news articles which purported to prove that the new associate justice had been and was still a Klansman. Mr. Black refused all comment until his return from a vacation abroad. Then, speaking in a nation-wide radio broadcast, he declared that he had joined the Klan 15 years ago, had later resigned, and had never rejoined. The statement virtually closed the issue, though some flickering interest in it was revived during the early weeks of October, when a futile effort was made to have the appointment set aside by the Court itself.

(G. P. Ba.)

SURGERY. The outstanding contribution to orthopaedic surgery in late years has been the revival, on a sound basis, of internal fixation for recent fractures of the neck and of the femur or thigh bone by means of a triple flanged nail, or by pins, or by lag-screws. These methods make wearing of a cast unnecessary, and permit early movement of the leg. Not only is union of the broken bone obtained in a high percentage of cases, but the stiff hip and stiff knee are largely prevented.

In plastic surgery, better understanding of the instances requiring use of the pedicle skin graft, of the free dissected graft, and of the shaved graft has improved the cosmetic results of plastic operations about the face. Advanced methods of transplanting flaps of mucous membrane from the nose to replace the absent mucous membrane in cases of cleft palate have improved functional and cosmetic results. The inlying split skin graft taken from the thigh also has been more extensively applied than before in treatment of certain congenital abnormalities of the genito-urinary tract; for instance, in the correction of failure of the male sex organ to develop properly. The same type of split skin graft, covering a rubber tube, has been used successfully in the formation of the female sex organ when this structure has failed to develop. The risk of such a procedure is infinitely less than that of other methods of forming artificial organs.

Removal of obstructing portions of the prostate gland by procedures carried out through the natural openings with a mortality of less than 1 per cent. has practically superseded the open methods of removal, in which the risk was considerably greater. Control of infection in connexion with operative or diagnostic procedures relative to the urinary tract has been importantly improved by demonstration of the value of increased acidification, effected with ammonium chloride and mandelic acid. This, and the more recent use of sulphanilamide, have proved efficient in controlling most of the urinary infections even in otherwise intractable cases. Sulphanilamide must be used cautiously and under the daily supervision of a physician. Conservative surgical procedures directed towards relief of urinary obstruction in the kidney have assisted in the preservation of many hydronephrotic kidneys, as well as in the removal of multiple obstructing renal calculi. In this respect, the use of roentgenoscopic and roentgenographic examinations of the kidney in the operating-room, both prior to and subsequent to removal of stones, has been of great assistance in removal of all of the stone fragments.

In surgery of the nervous system, physiological knowledge has been applied in treatment of essential hypertension, or high blood-pressure which develops without demonstrable cause. Apparently this condition is attributable to vasomotor spasm of the arterial system, caused by abnormal stimuli from the brain and spinal cord reaching the arteries and arterioles through the sympathetic nervous system. Numerous operations have been devised to interrupt these stimuli in order to prevent a large vascular area from receiving excessive vasomotor stimuli as well as to make available a reservoir in these same arteries when the non-denervated arteries and arterioles go into spasm. Adson advocates bilateral resection of the splanchnic nerves, with removal of the upper two lumbar ganglions on each side, effected through a subdiaphragmatic, extraperitoneal approach, in order to denervate the arterial system below the diaphragm. Another advance in this field has been in treatment of intractable sciatica. The cause of this condition frequently had been overlooked until injection of a radiopaque oil into the spinal canal was employed to reveal filling defects opposite the intervertebral foramina. Roentgenographic observations, after the injection, allow localization of protruded portions of a ruptured intervertebral disc. Lumbar or sacral nerve roots are irritated or compressed by these tumour-like masses. Removal of them is effected by excision after laminectomy.

Thoracic surgery, although a relatively new field, has made great progress in recent years owing to better understanding of many physiological problems necessary to function of the vital organs contained within the thorax and to the development of surgical methods that will ensure sufficient function of these organs to maintain life during operative procedures on them. It is now relatively common to remove one or more lobes of a lung for certain inflammatory or malignant conditions. It is also possible to remove some tumours and cysts from the lung and adjacent structures, with complete relief of symptoms. Operative procedures have been developed which make possible rectification of certain conditions of the heart as well as those of its pericardial covering; many patients who otherwise would have died are being restored to health. In cases of herniation of abdominal viscera into the thorax, a condition often called ‘ upside-down stomach ’, the herniated viscera are replaced and the abnormal opening in the diaphragm is repaired. This operation is now done relatively often. Marked advance has been made in surgical treatment of pulmonary tuberculosis, and surgery is now one of the greatest aids in fighting this dreaded disease.

Various physical principles have been applied in designing operating-room equipment. Operating rooms are conditioned with filtered air, which is subjected to ultraviolet radiation both before and after entering the operating room. The latter has been accomplished by means of lighting apparatus. When this apparatus is used, the operating personnel must wear special goggles, masks, gowns, and so forth.

Further improvement in the field of anaesthesia, including intra-spinal injection of solutions of procaine, has continued to gain in favour both among surgeons and patients. The risk of this method of anaesthesia has been progressively lessened by better understanding of it and by control of decreases in blood-pressure by intravenous injections of ephedrine. Introduction of anaesthetic substances which can be injected intravenously has been of great value in short operations wherein abdominal relaxation is not required. (Wa. Wal.)

Much interest has been aroused in the treatment of heart disease by grafting the omentum to it. C. S. Beck and V. L. Tichy in America have conducted experiments on this problem, and in the year under review Mr. Laurence O'Shaughnessy of London gave an account of his experimental work and of the results he had obtained in human patients. The omentum, which is a sheet of peritoneum hanging loose in the abdominal cavity, is brought up through an opening in the diaphragm and sutured to the heart. As a result the heart subsequently receives a fresh set of blood-vessels from the highly vascular omentum. The operation is performed on those patients in whom there is clear evidence that the heart is suffering from a lack of blood as a result of thickening or occlusion of the coronary arteries, which convey blood to the heart muscle. (X.)

SURINAM (Dutch Guiana), a Dutch colony in north-eastern South America; area, 54,291sq.m.; population (1937 census), 148,971, excluding *c.* 17,000 negroes, and 3,500 Indians in the jungle; capital, Paramaribo (pop. 52,705); governor, Dr. J. C. Kielstra. The colony is governed by an appointed governor and partially elected council. The new constitution, in effect July 8, 1937, somewhat broadened the electorate. Surinam has one railway (85m.), and some fairly good roads in the coast district. External communication is by steamship lines and a bi-weekly air service. The chief imports are manufactured goods and foodstuffs; the chief exports are coffee sugar, molasses, miscellaneous agricultural products, and gold. Gold production in 1936 totalled 443,487 grammes. The monetary unit is the Dutch florin (value: approx. 1*s.* 7·8*d.*). Government expenditure in 1936 was 6,688,875 florins and the revenue but 3,904,577 florins, necessitating a Netherlands Government subsidy. In 1936, Surinam had 132 schools (43 Government), with a 22,130 attendance, besides 33 Indian and negro schools in the jungle.

SWAZILAND. A British protectorate in South Africa, bounded N., W., and S. by the Transvaal, and E. by Portuguese East Africa and Zululand. It is administered by a resident commissioner, Mr. Chas. Lamb Bruton, O.B.E., under the high commissioner for South Africa; but during 1937, steps were taken with the object of transferring the protectorate to the Union (*see* South Africa, Union of). The paramount chief of the Swazis is Sobnuza II, but concessions to Europeans have left barely one-third of the territory to the natives. The administrative headquarters are at Mbabane.

Area 6,704sq.m.; population (1936), Bantu 153,270, European 2,740. There are Government and missionary elementary schools. St. Mark's primary and secondary school for European boys and girls has 96 pupils. The Chief supports the Swazi National School.

A motor service on the main routes is run by South African Railways, and one from Goba railhead to Stegi by

Portuguese Railways. There are no railways. Maize, tobacco, and citrus are produced, tobacco production in 1936 being 261,794lb. Export and import statistics are not available, since Swaziland is treated as a province of the Union of South Africa ; its share of revenue from customs in 1935–36 was £19,822. A poll-tax of £1 15*s*. is paid by all native males, and £1 10*s*. for each wife after the first, up to a maximum of £4 10*s*. Two shillings from each unit of tax is credited to the Swazi National Fund for education and social services. Currency is as for the Union of South Africa. Total revenue and expenditure for 1935–36 were £158,479 and £135,255 respectively.

SWEDEN (Swed. *Sverige*), kingdom of northern Europe, member of the League of Nations. Bounded N. by Norway, E. by Finland and Baltic waters, S. by the Baltic Sea, W. by Baltic waters and Norway. Capital, Stockholm. Ruler, King Gustaf V (born, 1858 ; succeeded, 1907). National flag, a yellow St. George's cross on a blue ground.

Area, Population, and Cities.—Area : including lakes (3,505) 173,347sq.m. ; population : (1930 census) 6,142,191 ; (1935 estimate) 6,249,489 :

Government (Län)	Area (sq. m.)	Population (1935)
Älvsborg	4,919	321,433
Blekinge	1,173	146,315
Gävleborg	7,609	281,096
Göteborg and Bohgs . .	1,948	469,908
Gotland	1,220	58,049
Halland	1,901	152,863
Jämtland	19,967	136,540
Jönkoping	4,449	236,023
Kalmar	4,456	231,918
Kopparberg . . .	11,649	248,930
Kristianstad . . .	2,488	248,587
Kronoberg	3,826	154,549
Malmöhus	1,871	518,934
Norrbotten . . .	40,742	207,553
Örebro	3,561	218,945
Östergötland . . .	4,266	312,329
Skaraborg	3,269	240,777
Södermanland . . .	2,630	188,882
Stockholm (City) . .	55	533,884
Stockholm (Dist.) . .	2,986	271,110
Upsala	2,059	139,137
Värmland	7,427	273,282
Västerbotten . . .	22,838	214,914
Västernorrland . . .	9,924	282,022
Västmanland . . .	2,609	162,009

Swedes are prevalently of pure Scandinavian stock ; practically all belong to the State-recognized Lutheran Protestant Church.

Elementary education is compulsory and free. Elementary pupils (1934) : 642,436 ; in secondary and high schools (1935) : 53,000 ; in Upsala and Lund universities (1936) : 6,200.

Principal towns (1936) : Stockholm (533,884), Göteborg (busiest port) 258,387 ; Malmö (141,485) ; two others had over 50,000, and 12 more over 25,000.

History for the Year 1937.—The King wields executive power, under advice from a Council of State (Premier and ten ministers), and, on legislation, a Diet (First Chamber, 150, elected for eight years ; Second Chamber, 230, elected for four years by universal suffrage and proportional representation ; Social-Democrats hold majorities). The (1936) ministry is Socialist-Agrarian ; Premier, Hr. P. A. Hansson.

The year was regarded as prosperous. Prince Carl, nephew of the King, renounced his rights on marriage (Stockholm, July) to Countess Elsa von Rosen.

Intimately concerned with a revival of the Oslo Convention (*see* Norway), Sweden sent her foreign minister, Hr. R. J. Sandler, to London and Paris upon this and other matters (March). September saw inauguration of the Gren scientific research foundation to promote co-operation between Scandinavian countries.

Trade, Communications, and Finance.—The percentage (below 50) of the population living by agriculture (hay, oats, potatoes, beet) is decreasing. The forests are valuable. Mining remains the chief industry ; iron ore is mainly exported. Timber and timber-products (including paper and pulp) and machinery are leading exports. Exports—1,505 million kronor (£75,000,000)—and imports —1,619 million kronor (£81,000,000)—for 1936 showed increases, maintained in half-1937. Sweden trades largely with Britain.

Of about 10,500 miles of railway, rather less than half are State-owned (and, of that, 35 per cent. electrified). Telegraphs and telephones are well developed. Commercial aviation (616,000 miles ; 22,960 passengers—1935) is subsidized. Mercantile marine (1936) : 1,259 ships (1,514,917 tons).

The unit of currency is the (nickel) krona (at par, 18·16 kronor = £1). Budget estimates (1937–38) were 1,291,486,000 kronor. The National Bank, guaranteed by the Diet, returned a balance-sheet (Dec. 1, 1936) of 1,578,088,777 kronor, notes in circulation representing little over half. Savings banks (post office and other) had (1935) 4,500 million kronor on deposit in 7,218,091 accounts.

Defence Forces.—The army (conscript and volunteer) had (1936) 1,688 officers and 21,813 other ranks (potential total, 575,000) ; the air force, 850 all ranks (93 machines) ; the navy, 310 officers, 3,800 other ranks (seven coast defence ships, two cruisers). Defence expenditure : 126 million kronor. The July reorganization authorized substantial additions to the navy.

Bibliography.—R. Svanström and C. Palmstierna, *Short History of Sweden* (London, 1934) ; C. Grimberg, *History of Sweden* (Rock Island, 1935). (H. Fw.)

SWIFT, SIR RIGBY (PHILIP WATSON) (the Hon. Mr. Justice Swift), British lawyer ; born at St. Helens, Lancashire, in 1874 ; died at Crowborough, Sussex, Oct. 19, 1937. He was educated at Liverpool and London University, and was called to the bar in 1895, joining the Northern Circuit. He became a K.C. in 1912, was Recorder of Wigan from 1915 to 1920, and was made a Bencher of Lincoln's Inn in 1916. From 1910 to 1918 he represented St. Helens in Parliament as a Conservative. In 1920 he was knighted and was appointed Judge of the King's Bench Division, in which he reached the position of senior Judge. His wife Beatrice, daughter of Mr. J. B. Walmsley, a Liverpool shipowner, whom he married in 1902, died in April 1937. Mr. Justice Swift was an outspoken critic of the English divorce and betting laws.

SWIMMING made notable strides in 1937. Increasing recognition of its value in life-saving and physical culture was manifest the world over. Everywhere there was a greater tendency towards making swimming an integral part of the curriculum at schools and universities. Germany decreed that all her boys and girls must learn to swim before the age of 19.

As a competitive sport, swimming progressed apace ; the number of contestants grew ; average skill improved materially ; in most countries many national records were broken ; quite a few world's records also fell. Foremost internationally were the exploits of Miss Ragnhild Hveger, of Denmark, and Ralph Flanagan, of the United States. Miss Hveger, a 17-year-old marvel, shattered nearly a dozen world's standards, some several times. Her greatest feats were to lower the time for 440-yards free style from 5mins. 22secs. to 5mins. 12·8secs, and 400-metres back stroke from 5mins. 59·8secs. to 5mins. 44·5secs. Flanagan swam his best in cutting the world's record for one mile from 20mins. 57secs. to 20mins. 42·6secs. On the way he passed 1,650 yards in 19mins. 18secs., outdoing Hirosi Takahasi, of Japan, who set 19mins. 37·8secs. as the year's fastest time for 1,500 metres (1,640·4 yards), the Olympic route. Other new records set up during 1937 were: Men's 100-metres breast stroke, J. Cartonnet, France, 1min. 9·8 secs.; women's 300-metres breast stroke, J. Waalberg, Holland, 2mins. 56·9secs. An English record was set up by N. Wainwright, who swam the half-mile in 10mins. 26·6secs.

Five Americans competed in Japan, and three of them were successful: Adolph Kiefer at the back stroke, Elbert Root in diving, and Katherine Rawls in crawl and dorsal tests.

The European championship at water polo (the Hortly Cup) was won by Hungary. The year was also notable for the swimming of the English Channel from Cape Grisnez to Dover by Tom Blower of Nottingham, in 13hrs. 29mins.

SWING MUSIC: *see* Jazz.

SWITZERLAND (Fr. *Suisse*; Ger. *Schweiz*; It. *Svizzera*), a confederation of west-central Europe, member of the League of Nations, bounded N. by Germany, E. by Austria, S. by Italy, and W. by France. Capital, Bern (fourth city in population). President (1937), Dr. Giuseppe Motta. National flag, a small white Maltese cross on a red ground.

Area, Population, and Cities.—Area: 15,944sq.m.; population (1930 census): 4,066,400:

*Canton	Area (sq. m.)	Population (1930)
Aargau	542	259,644
Appenzell (Ext.)	94	48,977
Appenzell (Int.)	67	13,988
Basel	165	92,541
Basel (City)	14	155,030
Bern	2,658	688,774
Fribourg	645	143,230
Genève	109	171,366
Glarus	264	35,653
Graubünden	2,746	126,340
Luzern	576	189,391
Neuchatel	309	124,324
Nidwalden	106	15,055
Obwalden	190	19,401
St. Gallen	777	286,362
Schaffhausen	115	51,187
Schwyz	351	62,337
Solothurn	306	144,198
Thurgau	388	136,063
Ticino	1,086	159,223
Uri	415	22,968
Valais	2,021	136,394
Vaud	1,239	331,853
Zug	93	34,395
Zürich	668	617,706

* The name of each canton is given in the language predominant in it.

Protestants were returned as 57 per cent. of the population, Roman Catholics as 41. Almost three-fourths spoke German, one-fifth French, one-sixteenth Italian.

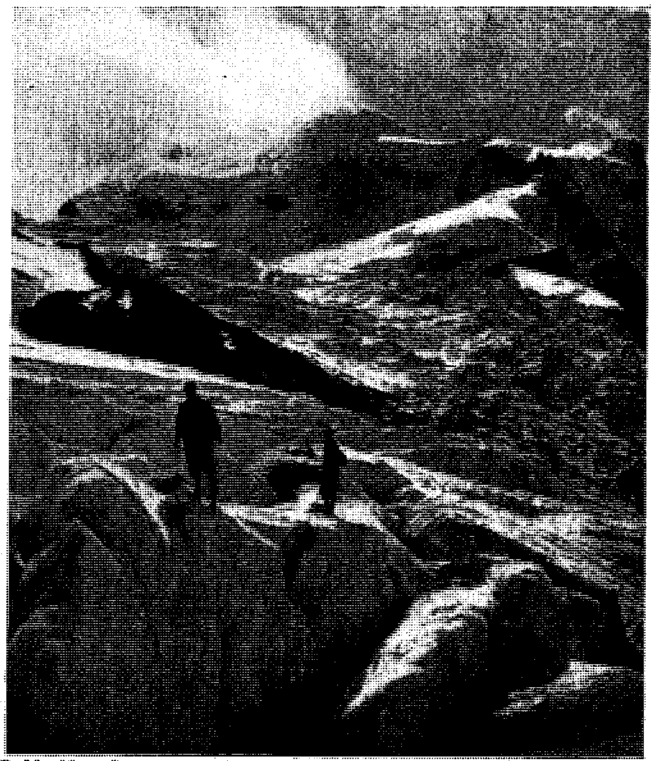
Elementary education is obligatory and free. Statistics (1934–35): 4,333 primary schools with 473,040 pupils; 713 secondary schools with 77,257; (1935–36) seven universities with 8,738.

Zürich is the largest town (1933: 312,600); Basel, Geneva, and Bern exceeded 100,000; three others, 50,000 (1930).

History for the Year 1937.—Each canton is autonomous, the Federal government ruling only in war and treaties, and supervising the national services. Election results, Oct. 27, 1935: National Council (elected by adult suffrage and proportional representation for four years), Social Democrats 50, Radicals 48, Catholics 42, Agrarians 21, other parties 26. Council of States, Radicals 15, Catholic Conservatives 18, other parties 8. The seven members of a Federal Council act as ministers.

Switzerland's rôle of hostess for international conferences (apart from the League of Nations, since 1936 in the new *Palais des Nations*, Geneva) was sustained by the meeting of Powers at Nyon, occasioned by the Mediterranean situation arising from the war in Spain. In June Geneva was discovered to be in use as a centre for smuggling arms via France to Spain. In November the principle of *popular initiative* (see *Ency. Brit.*, vol. xxi, 677–8) was invoked for a proposal to amend the Constitution so as to re-establish the complete neutrality, economic as well as military, existing prior to 1914. It was foreseen that this would raise the issue of sanctions, and so of membership of the League of Nations. In April the Communist Party was banned in Neuchâtel canton—the first suppression in history of a political creed by vote; in June, Geneva canton followed suit. In July, Romansch, a Latin derivative, spoken by some 50,000 in eastern cantons, was declared an official language (the fourth). In March exceptionally heavy weather gave rise to disastrous avalanches and some perilous rescues therefrom.

Trade, Communications, and Finance.—Almost half the area is unproductive or forest land (reafforestation is active); most of the remainder is under grass and pasturage (cheese and condensed milk are leading industries); agriculture engages over one-fifth of the population. Pisci-



E. Meerkämper]

A VIEW IN THE SWISS MOUNTAINS

culture is pursued; 18 cantons produce wine. Clocks are an outstanding manufacture (nearly 17 million in 1935; an increase of 2½ million on 1934). Imports (1936): 1,266,262,000 frs. (£58,680,000)—a slight fall; exports: 881,633,000 frs. (£40,816,000)—a slight rise. Britain took one-seventh (watches and silk goods leading). Half-1937 figures showed substantial increases.

Of the State railways (3,218 miles) 1,313 miles had been electrified in 1935. Road mileage: 10,200. Air transport is developing: 1,055,635 kilometres; 21,485 passengers; 173,424 kilos mails and goods (1936). Posts, telegraphs, and telephones (including radio) are highly developed.

Unit of currency: (silver) franc (at par 25·22 frs. = £1 = $4.87). Budget expenditure (1936): 540,497,667 frs. The National Bank has the right of note-issue; in circulation (March 6, 1937): 1,355,431,000 frs. Total public debt (including railways): 5,448,015,000 frs.

Defence Forces.—Service in the militia is compulsory: under training, 46,200—period, 88 days; aeroplanes, 160; military expenditure (1936), 98,500,000 frs.

BIBLIOGRAPHY.—E. Gagliardi, *Geschichte der Schweiz* (3 vols.; Zürich, 1933); M. Reymond, *Histoire de la Suisse* (3 vols.; Lausanne, 1933). (H. Fw.)

SYDNEY. Capital city of the State of New South Wales (*q.v.*), Australia; situated on a natural harbour (Port Jackson) extending 20m. inland and having a water frontage of 188m., at the mouth of the Parramatta river; the largest city and port of Australia; distance from London, 11,630m. Pop. (Dec. 1936), including suburbs, 1,267,350, comprising 47·3 per cent. of the population of New South Wales; area, 154,688 acres. Shipping (1935–36): tonnage entered, 10,479,774 tons net; cargo discharged, 1,319,633 tons (478,974 tons inter-State); cargo shipped, 1,356,386 tons (190,649 tons inter-State). The volume of shipping entering the port in 1936–37 constituted a record, as did the tonnage of goods handled.

Sydney enjoyed a real-estate and building boom in 1937. Sales of real estate in the city and suburbs in the nine months to September were 519 per cent. above depression level (1931); in some areas inquiries for suburban properties exceeded the number recorded in the boom years 1927 and 1928. Trolley buses were inaugurated, and big extensions made to suburban bus services (State-owned). Progress was made with the City Railway, running underground from Circular Quay. The accounts of the Sydney Harbour bridge showed a surplus for the first time in 1936–37, income being £477,858 (including £402,702 from tolls), and expenditure £415,810 (including £334,432 for interest). For 1937, a surplus of £3,451 was estimated, although the levy on local councils was abolished.

Preparations were made for the celebration in Sydney in 1938 of the 150th anniversary of the founding of Australia. (H. V. H.)

SYNTHETIC FUELS AND LUBRICANTS.

Catalytic hydrogenation is based upon the addition of hydrogen at high pressure in the presence of poison-resisting catalysts to coal or hydrocarbons, which are cracked to an extent dependent on the temperature employed. Compared with thermal cracking processes, destructive hydrogenation has the advantage of entirely avoiding the formation of coke and of producing from raw materials low in hydrogen content, and even from asphaltic feed stocks, the maximum yields of light boiling oils with only a small quantity of by-product hydrocarbon gas.

In addition to improving the production of petroleum products from crude oil, hydrogenation enables countries deficient in petroleum to produce commercial oil products from national raw materials. Apart from crude and shale oil, cracking residues, and similar oils, solid raw materials,

Hydrogenation is carried out in the following countries:

Country	Company	Raw materials	End products
Germany	I.G. and various licensees	Brown coal, bituminous coal, extracts, tars, tar oils, crude oil	Petrol, soon also diesel, heating and lubricating oil, wax
Great Britain (Billingham)	I.C.I.	Bituminous coal, creosote oil, low-temperature tar	Petrol
Italy	A.N.I.C.	Crude oil	Petrol
U.S.A. (Bayway and Baton Rouge)	Standard Oil Co.	Crude oil	Petrol, solvents, lubricating oil

Additional plants are planned in other countries.

Fox Photos]

VIEW OF THE CRICKET GROUND AT SYDNEY AS SEEN FROM THE FAMOUS 'HILL' especially bituminous and brown coal as well as peat, wood, and their tars and extracts may be treated. Existing plants can be easily adapted to variations in the raw materials, markets requirements, or changes in the specifications of the finished products. The production of petrol was the first commercial application of this process.

The character of the fuel varies to some extent with the raw material employed, bituminous coal giving end products of aromatic character and brown coal mainly naphthenic and paraffinic products. Crudes and residues behave in a similar manner according to their molecular structure and hydrogen content. Petrol from bituminous coal has the lowest hydrogen content and the highest knock rating. By suitable gradation of the splitting and hydrogenating reactions, however, high antiknock petrols can also be made from brown coals and petroleum. All these petrols have in common a high content of isoparaffinic compounds and also good susceptibility to antiknock agents. Highly aromatic, high knockrating petrols can be obtained by the use of mildly hydrogenating catalysts, in particular from bituminous coal or similar material. Aviation fuels produced by this method are of high quality. The hydrocarbon gases arising from the process can be compressed and utilized as motor fuel.

Hydrogenation produces completely refined products, and when applied to the refining of light boiling fuels, oxygen, nitrogen, and sulphur impurities are removed with practically no loss of hydrocarbons. The ignition properties of diesel oils are enhanced by high hydrogen content and, therefore, raw materials such as brown coal or crudes with high hydrogen contents are suitable for their production. By the use of strongly hydrogenating catalysts or elevated pressures, such diesel oils can also be produced from bituminous coal with the advantage that they possess extremely low pour and cloud points.

Improvement of lubricating oils from low to high viscosity index stocks found early commercial application. By suitable mild treatment of brown coal tar, machine and motor oils of high hydrogen content are produced without gas loss. Similar lubricating oils can be obtained by direct hydrogenation of brown coal and brown coal extracts. In both cases an additional yield of paraffin wax corresponding to the bitumen content of the raw material may be obtained.

In conclusion, it may be said that a great variety of raw materials can be converted under suitable conditions into fuels and lubricating oils of any desired quality by the process of catalytic hydrogenation. (M. P.)

SYNTHETIC PRODUCTS. *See* Chemistry, Applied; Germany: *Economic Nationalization and Synthetic Products*; Industrial Research; Rayon; Rubber; Synthetic Fuels and Lubricants; Textile Industry; Wool, etc.

SYPHILIS: *see* Venereal Diseases.

SYRIA AND LEBANON. These Levantine republics are administered under a French mandate, pending their acquisition of independence. The president of Syria is Hashem Bek el Atassy, elected Dec. 1936, and that of the Lebanon Emile Eddeh, elected Jan. 1936. Total area, *c.* 57,900sq.m.; total population (1935), 3,630,000.

Syria is predominantly Mohammedan, and Lebanon Christian. The capitals are Damascus (Syria) and Beirut (Lebanon). (X.)

History.—The year 1937 in Syria and Lebanon was dominated by the expectation of a change of régime. On Sept. 9 and Nov. 13, 1936, respectively, treaties of friendship and alliance had been signed in Paris between France and Syria, and between France and the Lebanon. The texts of these treaties have been ratified by Syria and Lebanon respectively; they await the ratification of France. Article 8 of the French Constitutional Law of July 16, 1875, forbids their ratification until they have received the approval of the Chambers. On July 6, 1937, the Government deposited with the Chamber of Deputies a projected law approving the treaties; but at the end of the year the Senate, which will probably not be favourable, had not taken the matter up.

The Syrian and the Lebanese treaties present totally different characters. The Syrian treaty brings into effect a liquidation demanded and obtained by a nationalist Pan-Arab Government. The result of the Lebanese treaty, on the other hand, would be to consolidate French protection and replace the Mandate by a contractual régime which is not unlike that of the Protectorates. While the Moslems of Syria were anxious to free themselves from French tutelage, the Christians of the Lebanon, anxious for their independence and for their very lives, wanted to keep the protection of France. For, in those regions, the States are purely artificial constructions, and do not correspond to any human reality. The only reality is religious faith. The State of Syria considers itself too small, and wishes to join a confederation of all the Moslem countries of the Near East. The Christian State of Lebanon, on the other hand, considers itself too big, and would willingly abandon to Syria the southern and eastern districts whose population is chiefly Moslem.

In a social structure of this kind it may be imagined that it is not easy to safeguard minority rights. In fact, in Aug. 1937 Christians were massacred at Amouda, in Upper Jezireh, on the borders of Turkey and Iraq. The aggressors were Kurds, said to have been encouraged and financed by the Arab Government in Damascus. (R. Pin.)

SZYMANOWSKI, KAROL, Polish composer; born at Timoshovka, Russia; died near Lausanne, Switzerland, March 29, 1937. A biographical note is to be found in the *Ency. Brit.*, vol. 21, p. 727. Since 1922 he had been professor of composition and director of the State conservatory at Warsaw. The most famous of his later works was the ballet *Harnasie* based on Polish folk songs and dances, performed in Paris a few months before his death, and in New York City but two days after he had died. Within recent years he had also written the masques *Scheherezade*, *Tantris the Fool*, and *Don Juan's Serenade*, the chorale *Stabat Mater*, and the opera *King Roger*.

T

TABLE TENNIS. The recent progress of Table Tennis in the British Isles has been quite remarkable. Almost every important centre now has an affiliated Table Tennis League, the number of these having increased from 157 to 201 in the past 12 months.

Another indication of the growth of the game was provided by the exceptional amount of advance interest shown in the 1938 World Championship contest, the Albert Hall and Wembley being the venues.

The holder of the World title in 1937 was M. Bergmann, of Austria. The title of Women's Champion was vacant, the final between Miss Ruth Aarons, of U.S.A., and Miss Pritzi, of Austria, being abandoned, under the time-limit rule, after play had been in progress for 1 hour and 45 minutes.

Miss Aarons won the English Women's Championship, while G. V. Barna, of Hungary, is the reigning English Open Champion. The United States hold both the Swaythling Cup and the Marcell Corbillon Cup. The Wilmott Cup, competition for which becomes stronger as new Leagues are formed, was won by the South London League, who beat the Liverpool League in the Final.

Two interesting and far-reaching changes have been made in the laws of the game. It is now no longer legal to use the finger-spin in serving—the ball shall be 'released by hand only without imparting spin'. More important is the decision to lower the net from 6¾in. to 6in. Opinion on the likely effect of this change is by no means unanimous, but it is hoped that it will encourage attacking methods, and eliminate the 'pushing' game which has spoiled many matches from the spectacular point of view.

TAHITI : *see* Pacific Islands, French.

TAJIK S.S.R., a member of the U.S.S.R. (*q.v.*). This Central Asiatic Soviet Republic, the nearest to India, borders on the republics of Uzbekistan and Kirghizstan, on China and Afghanistan. The capital is Stalinabad (formerly Diushambe); the national flag has a red ground, with a gold hammer and sickle and name of the republic in the top left-hand corner. The leading cities (1936) are Stalinabad (49,600) and Leninabad (67,700).

Area and Population.—Area: 55,598sq.m. of almost entirely mountain country. In the east are the Pamirs, the highest mountains of the Soviet Union, with vast glaciers. Population (1933): 1,333,000 (rural, 1,187,000, urban, 146,000), of whom 78·4 per cent. are Tajiks and 17·9 per cent. Uzbeks. The main languages spoken are Tajik, Uzbek, and Kirghiz. The total number of pupils in schools (1936–37) was 199,000.

History.—The sixth Extraordinary Soviet Congress at Stalinabad adopted on March 1 the new constitution of Tajikistan, according to which the republic includes 59 districts, in addition to the Gorno-Badakhshan Autonomous Area. The capital, Stalinabad, and the town of Leninabad form special administrative units. 95·3 per cent. of the population took part in the elections to the Supreme Council of the U.S.S.R. on Dec. 12. At the beginning of October the president, the premier, and three other commissars of the republic were removed from office as 'enemies of the people', bourgeois nationalists, and fascist agents, and arrested on charges of treason.

Trade and Communications.—The sown area (1936) was 2,616sq.m., and in 1937 89·9 per cent. peasant households were collectivized. Wheat, cotton plantations, fruit farming in the mountain valleys in the west, and cattle breeding in the mountains, are the main activities.

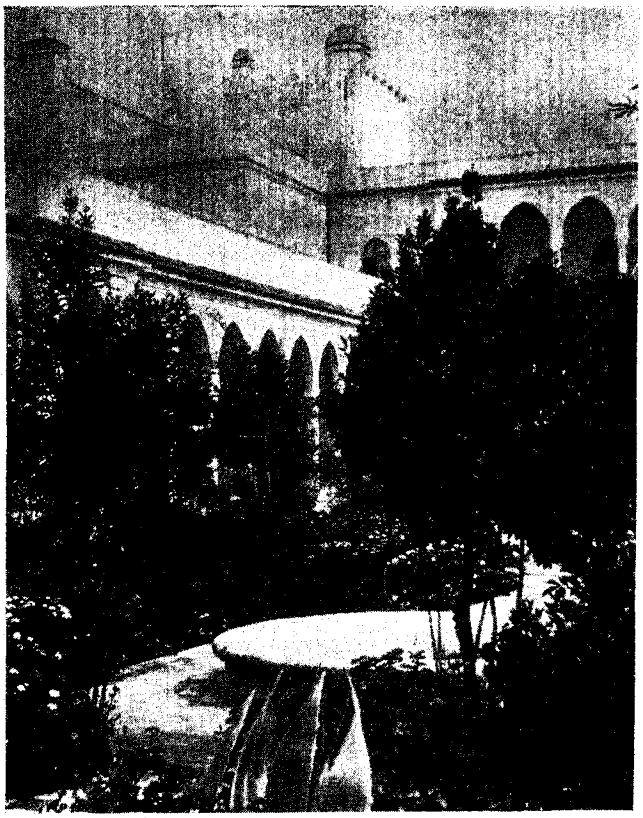
Natural resources include water power, recently discovered minerals through the expeditions of the All-Union Academy of Sciences, non-ferrous metals, gold, silver, lead, oil, and coal.

The retail trade turnover (1936) was 0·6 milliard roubles. Exports included cotton, fruits, silk, wool, tin, lead. There is a railway line from Stalinabad to Termez (253km), and several mountain motor roads. (S. Yak.)

TANGANYIKA, formerly German East Africa, a territory held since 1920 by Great Britain under mandate from the League of Nations, bounded on the north by Kenya and Uganda, on the west by the Belgian Congo, on the south-west by Northern Rhodesia and Nyasaland, on the south by Mozambique, and on the east by the Indian Ocean. Its estimated area is 366,000sq.m., and its population (1935) about 5,135,000, including some 8,500 Europeans and 33,000 Asiatics. The governor is assisted by a nominated executive council and a legislature with a majority of official members. Dar-es-Salaam (pop. *c.* 30,000) is the administrative centre. The principal native language is Swahili: there are many Mohammedans and native Christians. There are two state schools and about a dozen state-aided private schools for Europeans, over 50 Indian schools, and about 80 government schools for natives. Railways extend nearly 1,400m., and there are about 17,000m. of roads fit for motor traffic; 48 government and 6 private aerodromes exist. A great deal of the territory is under forest; the most valuable mineral produced is gold. Revenue (mainly from taxes, customs, etc.) for 1936 was estimated at £1,946,000, and expenditure at £1,925,000. Exports—of which the chief were sisal, cotton, and coffee—for 1936 were valued at £4,805,000, and imports at £3,201,000. East African currency, based on the silver shilling of 100 cents, is in use. In 1937, a company was formed to lease land in the southern highlands for cattle-farming by settlers with co-operative marketing and social amenities. Some rioting took place in September in the Moshi district, owing to native dissatisfaction with the prices received for coffee, the buildings of the Kilimanjaro Native Coffee Union being destroyed. It was announced at the end of the year that the governor, Sir Harold McMichael, would relinquish his post in Feb. 1938 on appointment as high commissioner for Palestine.

TANGIER. An international zone of Morocco (*q.v.*), governed, under the Sultan, by an international assembly. Area *c.* 225sq.m.; population, *c.* 70,000.

History.—The zone of Tangier is directly affected by the Spanish civil war owing to its important position on the Straits of Gibraltar. In March, two Italian soldiers were wounded in a quarrel with Spanish communists, and the Italian Press accused of partiality the French magistrates in charge of the inquiry. France, on the other hand, suspected Italians and Germans of an unscrupulous use of



Elaine Bickerstaffe]

A GARDEN IN THE OUTSKIRTS OF TANGIER

propaganda in order to detach the people of Tangier from the Sultan, their ruler, by attacking his representative the *Mendoub*, and thus threatening the unity of Morocco, which was laid down in the Act of Algeciras.

TANNER, HENRY OSSAWA, American negro painter; born in Pittsburgh, June 21, 1859; died in Paris, May 25, 1937. He studied art under Thomas Eakins in Philadelphia, but had to work in various capacities before winning recognition and backing as an artist in 1890. He was made a chevalier of the Legion of Honour, and won many prizes for his work, specimens of which are in such collections as the Luxembourg, the Metropolitan Museum of Art, New York, and the Chicago Art Institute. Among his most important paintings are *Sodom and Gomorrah, L'Annunciation, The Three Marys,* and *Two Disciples at the Tomb.*

TARIFFS. The history of tariffs and import quotas in 1937 was disappointing to those who hoped that the increase of world prosperity would bring about a reduction of the barriers to trade which had been erected during the depression. Increases of tariffs and intensification of quota systems almost balanced their opposites. More encouraging was the gradual widening of the area of previous reductions, or of intermediate tariff concessions, through the extension of the most-favoured-nation régime (*see* TRADE TREATIES). There was also a tendency to replace clearing agreements by the less restrictive payments agreements with countries practising exchange control.

There was no major revision of the tariffs of either of the world's two leading trading nations, the United Kingdom and the United States. The latter made small extensions of most-favoured-nation undertakings. The first place on the list of countries that lowered tariffs in 1937 was taken by Canada. In February she concluded with the United Kingdom a trade agreement, under which she reduced preferential duties on about 150 items and sub-items of her tariff list, representing roughly 40 per cent. of her imports from the United Kingdom. The Canadian budget contained further tariff reductions, including many on the intermediate and general lists, to which the way had to some extent been opened by the agreement with the United Kingdom. In October, as a result of trade agreements with Australia and New Zealand, Canada lowered preferential duties on mutton and lamb, canned meats, wines, preserved eggs and fruits, hops, gelatine, and other articles.

The United Kingdom, in return for Canadian concessions, lowered duties on silk stockings and reed organs. Two other United Kingdom tariff moves had special causes. As a result of the shortage of steel, the protective duties on certain categories of iron and steel, imported under the quota agreement with the European cartel, were suspended in May, such goods paying thenceforward only the general duty of 10 per cent. In April, world wheat prices having risen to the level of the British guaranteed price, quota payments on wheat were suspended; they were, however, reimposed in September.

Australia was another country of the British Commonwealth that lowered barriers to trade in 1937. A wide revision of her tariff in June resulted in lower duties, especially preferential and intermediate rates, on many articles, including confectionery, felt piece-goods, iron pipes, tiles, and sanitary ware. In most cases, a proviso was attached allowing proportionate increases of duty if the Australian pound should appreciate. Reductions later in the year included, among lesser tariff items, linen piece-goods. In December, Australia decided to replace the import licensing system, which she had adopted under her trade diversion policy, by adequate protective duties, removing forthwith the restrictions on goods not competitive with Australian industry. The import quotas on motor chassis, however, were retained. The budget of the Union of South Africa also lowered a number of duties, including those on imitation leather, cash registers, drain-pipes, motor spirit, essential and mineral oils, clocks and musical instruments. Provision was further made for rebate of duty on a wide range of goods when used as material for local industry. New Zealand, under an agreement with Germany, reduced intermediate duties on cameras, clocks, field glasses, builders' hardware, medicines, etc., and abolished primage duty on other items. Southern Rhodesia, revising its tariff in April, lowered duties on many goods imported from the United Kingdom. There were sundry consolidations and changes of tariffs in the British colonial empire, the balance being slightly upward. The Irish Free State continued to raise higher duties, the articles affected including wool yarns and linen and cotton piece-goods. She also extended her system of quota restrictions. A special feature of British Empire tariff policy was the exceptional measures taken to limit or prohibit the import of foreign-made coronation souvenirs.

In Europe the most important tariff changes were those of France. Budgetary difficulties and a great increase of imports caused her in July to impose a general increase of customs duties by 13 per cent., together with some specific increases, notably on coffee and tea. There was, however, a long list of exceptions, which was extended as a result of the Franco-German trade agreement. In the later months of the year duties were increased on certain chemicals, millinery material, yarns and twine, bricks, tiles, drain-pipes, pottery, post cards, electric batteries, and tissues of linen, hemp, silk, and rayon, etc. etc. The list of articles subject to quota restrictions was also enlarged in the course of the year.

The State-controlled import régimes of Germany and Italy continued without major modification. It was significant, however, that the big cuts in the German duties on rye, wheat, barley, and oats, which had been made temporarily in Dec. 1936, were prolonged indefinitely in August, while temporary cuts in the duties on fodder and certain fruits were announced in March ; and that in Italy the reduced butter duty introduced in Dec. 1936 was followed in January by lower duties on wheat, maize, flour, and other wheat products. It was announced in July that all goods from Italian East Africa, except coffee, would be free of duty on import into Italy. Another notable German move was the large increases of duty imposed in June on rubber and goods containing rubber; latex, which had previously entered free, would henceforward pay RM 50 to RM 100 per 100 kgs.

In eastern and central Europe there was, on the whole, a certain relaxation of trade restriction in 1937. In January, Czechoslovakia announced an easing of her system of exchange permits and import licences, and in the following months the requirement of exchange permits was abandoned altogether, though certain goods were added to the list requiring import licences. Switzerland removed some import restrictions in January. After adding a number of fresh items to the quota list in March, Rumania removed from it most categories of iron and steel in April, and hides, sulphur, and metallurgical coke in July. A contrary development was the levying of new consumption taxes on coffee, beer, cotton goods, and certain metal products. Poland, as a result of her trade treaties with Germany and France, lowered duties on certain machines, toys, wines, fancy leather, and hosiery, *inter alia.* Various temporary reductions in Polish tariffs were also made. Bulgaria imposed higher duties on toothbrushes, trimmings, asphalt, yarns and threads, etc., but her new tariff of Sept. 1936 had involved many and considerable reductions. Hungary added extensively to her import restrictions in Feb. 1937, and in January Greece adopted a thorough-going revision of her import control system in the general direction of greater restriction. She followed this with higher duties on rice, accumulators, fertilizers, and a number of other goods.

Turkey also modified her import restriction system in 1937 (July), but in the opposite sense. Among other provisions, unrestricted imports would thenceforward be allowed from countries with which Turkey had (*a*) a net favourable trade balance, or (*b*) a clearing or similar agreement granting her a margin of not less than 20 per cent. between imports and exports. The first category included the United States and the second the United Kingdom. Among Turkey's many tariff changes during the year were increases on leather, shoes, woollen tissues, knitted goods, cement, glassware, iron and steel wire, iron pipes, coke, and accumulators; and decreases on paints and varnishes, some hides and leather manufactures, raw wool and woollen yarns, cotton and linen yarns, jute, timber, iron ore, plate glass, and musical instruments.

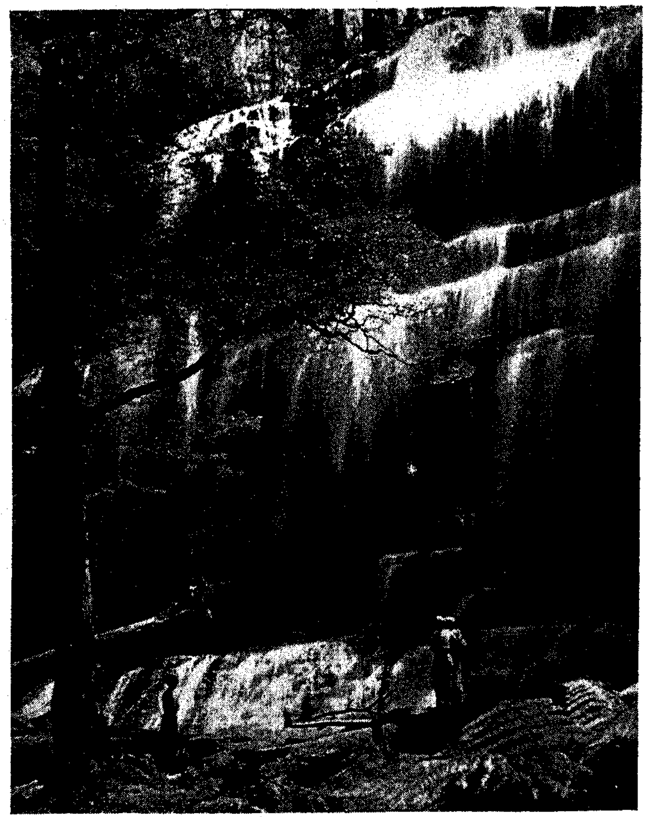
Among the northern European countries, there was the same lack of an obvious trend in tariff and quota policy. (*See*, however, the new arrangement among the Oslo group of Powers, under TRADE TREATIES.) Sweden, along with some decreases, imposed higher duties on grapes, iodine, and leather for glove-making, and decreed that milk and dairy products might be imported only with a permit from the State Agricultural Board. Estonia raised the duties on radio apparatus, and lowered those on coffee beans and other commodities. Latvia lowered her tariff on fruit pulp, borax, and blank cinematograph films. Belgium made a number of adjustments, some upward and some downward, in her tariff, including higher duties on certain footwear (November). She also extended her import licence system to margarine and edible fats. The Netherlands was content generally to prolong her quota system. The Netherlands East Indies extended their quota list to include a number of new commodities ; and submitted their tariff to a general revision which included a substantial cut in the duties on cotton piece-goods, underclothing, stockings, etc., but also a number of increases.

Outside Europe, apart from the changes already recorded, the most important development was the restriction of imports by Japan after the outbreak of the war in China. In August she imposed higher duties on motor-cars and parts thereof, and certain other articles, and in October she introduced a system of import and export licences affecting most foodstuffs, cotton, wool, leather, chemicals, jute, silk, flax, yarns, various tissues, clothing, paper, cement, watches, cycles, motor-cars and engines, etc. etc. Of the Latin-American countries, Bolivia raised her tariff by 60 per cent. in March ; Mexico in January modified 677 important tariff items, mostly upward ; Cuba increased the duties on vegetable oils (March) ; Panama put a number of articles on the free list, including champagne, toilet waters, electric motors and certain machinery, and lowered the duties on various chemicals and infant foods, but raised those on soap, hair creams, and sparkling wines (March) ; Venezuela made a number of changes in each direction (March) ; Chile imposed higher duties on whisky and on motor-cars, chassis, tyres and parts (November) ; El Salvador, under her trade agreement with the United States, lowered duties on ham, fruits, sawn wood, rubber tyres, and gramophone records (April), and later (July) those on celluloid, sanitary ware, and other articles. (H. V. H.)

TASHI LAMA, THE : *see* TIBET.

TASMANIA, a State of the Australian Commonwealth, forming an island 26,215sq.m. in area to the south-east of the mainland, from which it is separated by 140m. of Bass Strait. The State governor, representing H.M. King George VI, is Sir Ernest Clark, K.C.B. Population (March 1937), 233,191, comprising 3·4 per cent. of the population of Australia. Capital, Hobart ; population, with suburbs (1937), 64,480. The premier of a Labour government is Mr. A. G. Ogilvie, K.C.

History.—A general election for the House of Assembly took place on Feb. 20, 1937. The resulting party strengths were as follows (results of 1934 election in brackets) : Labour, 18 (15) ; Nationalists, 12 (14) ; Douglas Credit, 0 (1). A bill for the reform of the legislative council was accepted unanimously by the House of Assembly, where the government and the opposition reached a compromise, and was brought before the Council late in 1937. It abolished the council's power to reject money bills, but provided that, on the initiative of the council and with the advice of the Chief Justice, the governor might strike out of a money bill any item of expenditure not within the category of ordinary government service. Should the legislative council reject an ordinary bill, the measure empowered the government to seek a dissolution ; the council itself might be dissolved, after an interval of nine months from the general election, if it continued to refuse its assent to the bill.



Australian National Travel Association]

RUSSELL FALLS, NATIONAL PARK, TASMANIA

In 1936–37 the Tasmanian building industry had one of the most expansive years in its history. Reckoned per head of population, the value of building permits in Hobart exceeded the equivalent figures for the four greatest cities of the Australian mainland. Other economic indices also moved to prosperity levels in 1937 (*see* below). An important new development in transport was the carriage of mails by air across Bass Strait without surcharge. Four crossings were made daily, and the normal mail traffic was estimated at 25,000 letters daily in each direction.

Trade, Industry, and Finance.—Production in 1935–36 was valued (gross) as follows: agricultural, £2,312,530; pastoral, £1,571,730; dairying, poultry, and bees, £1,090,530; forestry, fishing, and trapping, £618,430; mining, £1,071,540; total, primary industry, gross £6,664,760, net £5,755,860; manufacturing industry, (net) £4,066,860. The government's economic adviser estimated that in 1936–37 about 5,850 persons were without normal full-time employment, representing about nine per cent. of those available. Corresponding figures for 1935–36 were 6,500 and 10 per cent. There is considerable seasonal unemployment in the State.

The budget for 1936–37 yielded a surplus of £44,906, instead of the small deficit that had been estimated. For 1937–38, revenue was placed at £3,515,201 (against £3,488,524 received in 1936–37), and expenditure at £3,512,569 (against £3,443,618). Land tax was remitted on agricultural, pastoral, or the like properties having an unimproved value of less than £3,500; the loss of revenue was made good by increases of tax on non-rural lands. Net loan expenditure in 1936–37 was £814,950. (H. V. H.)

TAXATION. The chief characteristics of recent developments are (*a*) the process of 'steepening' the progression in taxes on wealth and income; (*b*) the use of taxation as a means of achieving other social or governmental ends than revenue; and (*c*) the development of taxes on sales or turnover.

Progression in taxation achieved by the higher percentages charged upon the wealthier people is no longer based in principle merely upon the idea of 'equal' sacrifice, but is advocated widely as a means of redistributing wealth. Out of the fund so provided by the rich, the social services and pensions of the poorer members of the community are financed. It is urged that it is better, under an individualist system of society, not to try to fetter the making of profits and the personal initiative, but to allow the fortunes to be made and then to take high toll of them for social purposes. In consequence, at the highest ranges or 'brackets', rates of 60 per cent. or more are accepted as reasonable, and an average rate over the whole approaching 50 per cent. is not uncommon. Nor are people any longer greatly shocked to see that when 'death duties' are reduced to an annual equivalent, the total annual taxes for a wealthy man may exceed 100 per cent., inasmuch as the keeping of individual capital intact in large blocks is no longer thought a sacred duty. Moreover, the social value of excessive saving by the rich is called into question in many fields of economic analysis.

One of the general consequences of the high rates is the development of ingenious methods of legal avoidance—by establishing private corporations or companies (especially abroad) which receive and accumulate the income, and by various types of trusts—and the continual struggle of the legislative side to circumvent and discourage these devices.

Accompanying the sharper progression at one end of the scale we have a spread of devices at the lower end to make direct taxes reflect more exactly the personal status of the taxpayer in the compulsory use to which he has to put his income, *e.g.* allowances for children, for housekeepers, for dependent relatives, for sickness, and the like. In most advanced countries the income taxes are approximating to a greater similarity than formerly, although there are still wide disparities. The difference between the treatment of 'capital' profits or gains in the United States compared with British and European systems is a striking instance.

The developments indicated have now led into a widespread view that taxation expedients are rightly used to promote non-fiscal objects. For long the only field in which this was prevalent was that of protection of particular industries by customs duties, and now that Britain, since 1931, has given up taxation for revenue only, the arrangement of tariffs to develop certain economic ideas is general. But tariffs have also developed widely as defences against a non-industrial competition—the competition of depreciated currencies. When a currency in country A has been 'devalued', it has to give in exchange more units for a given currency unit in country B which has not altered its currency. An exporter from A to B gets the same price in B's currency as before, but this exchanges for more units of his own, and if he has not to pay in rent, interest, and wages a fully increased number of his own units, he has a greater margin of profit in his own units. This enables him to reduce prices in B, and become a formidable competitor—at any rate for a time. To ward B off, A then increases the tariffs on B's goods. These defensive tariffs in one form or another have multiplied greatly. Special taxes on income going abroad are designed to achieve ulterior objects, such as discouraging investment by foreigners in the home securities; the 10 per cent. recently applied in the United States is an example. A tax on undistributed profits of corporations is intended to prevent hoarding by companies, which is regarded as deflationary, and to push purchasing power into the hands of the stockholders, so that their spendable incomes will be increased. This is the use of taxation as means to achieve special economic ends. As a rule they have unexpected repercussions and are clumsy means to the end desired. Perhaps the most thoroughgoing use of taxes to promote social objects or hinder social tendencies has been elaborated in Germany. The object of the legislature has been 'to reorganize taxes to make them fit the policy of national socialism, with reference to population, social welfare, economics and national socialist philosophy.' As a consequence there are taxes on bachelors and spinsters to change their numbers and provide funds for marriage loans; new capital equipment in businesses at particular dates is favourably treated; automobiles purchased at particular times are differentially treated; employment of girls is encouraged; the taxation of partnerships is reduced and that of companies increased to stimulate personal responsibility.

The growth of taxes on sales has been remarkable, and there is no instance in the whole history of taxation of such a rapid development. In a few years over 30 nations had adopted them, and in the United States between 1929 and 1934 the spread was rapid. In France many commodities have been specially excepted, to be subject to special taxes, and in general the tax requires no exact figures or evidence—it is based on estimates, with outward signs. It causes wide changes in business methods and tends to favour large integrated companies. In the United States, probably the decline of the personal income tax in the depression of 1931–35, with the necessity to maintain and even increase revenues, was an important reason for the spread, and the reduced valuations for the State property taxes were another cause. In North Carolina, for example, the policy for schools seems to have been closely related to the sales tax. The experiments in the different States are widely different. Great Britain has not adopted it, because it is 'regressive' on the poorer classes, but it is found in the majority of modern States, and when once it has been adopted it is often modified but rarely abolished. (J. C. S.)

TEA. During the years 1929 to 1932 stocks of tea throughout the world mounted rapidly, prices fell, and it was clear that world supplies were becoming far in excess of world absorption. These conditions gave rise to the international tea regulation scheme promoted on April 1, 1933, to control supplies from the main tea-exporting countries, India, Ceylon, and the Netherlands Indies, and remaining in existence. The other countries, notably China, Japan, and Formosa, and, to a lesser extent, French Indo-China, Nyasaland, Kenya, and other African countries which produce and export tea, are not yet parties to the regulation scheme, while the tea produced by Russia in the Caucausus is all consumed locally. A 'standard export' figure was fixed for each of the three regulating countries, and each year they are allowed to export a certain percentage of that standard. Since 1933 the percentage has been as follows:

1933/4	1934/5	1935/6	1936/7	1937/8
85 per cent.	87½ per cent.	82½ per cent.	82½ per cent.	87½ per cent.

During the current season stocks fell very considerably, with a corresponding rise in prices, and on Nov. 30, 1937, it was announced that the figure of regulation for the year 1938–39 would be 92½ per cent. of standard. If it is proved that the world's markets are able to absorb this increased quantity, it will be seen that the industry is moving in the direction of de-control.

The following table gives the total exports of tea from producing countries:

QUANTITIES IN MILLION LB. YEAR ENDING MARCH 31

REGULATING COUNTRIES					
	1932/3	1933/4	1934/5	1935/6	1936/7
INDIA . .	381·1	322·6	337·9	319·5	305·1
CEYLON . .	258·8	197·0	220·2	215·9	206·3
NETHERLANDS INDIES	186·6	136·2	145·2	146·5	147·8
	826·5	655·8	703·3	681·9	659·2
NON-REGULATING COUNTRIES					
	1932/3	1933/4	1934/5	1935/6	1936/7
CHINA . .	91·4	91·5	102·1	91·0	90·3
JAPAN . .	27·8	32·9	28·9	37·3	38·9
FORMOSA . .	14·9	16·6	22·2	20·4	22·0
FRENCH INDO-CHINA . .	1·5	1·6	2·8	2·5	3·0
NYASALAND .	3·0	3·7	5·4	6·7	8·6
KENYA . .	1·1	2·0	2·9	6·0	8·0
OTHER AFRICAN COUNTRIES .	·3	·4	·4	·5	1·3
	140·0	148·7	164·7	164·4	172·1
GRAND TOTAL .	966·5	804·5	868·0	846·3	831·3

Clearly, there has been a marked increase in recent years from non-regulating countries, whose competition will have to be reckoned with if regulation is ultimately discontinued.

The following table gives a summary of the absorption of tea throughout the world.

QUANTITIES IN MILLION LB. YEAR ENDING MARCH 31

	1932/3	1933/4	1934/5	1935/6	1936/7
UNITED KINGDOM*	427·2	432·4	436·3	451·0	463·3
EUROPE (excluding the United Kingdom).	114·6	130·8	123·1	128·0	110·0
NORTH AND CENTRAL AMERICA	132·3	130·8	110·8	121·4	130·6
SOUTH AMERICA.	10·2	8·6	10·1	11·2	11·3
ASIA . . .	29·2	32·9	41·8	35·5	48·4
AFRICA . .	62·2	61·4	60·7	65·0	74·0
OCEANIA . .	59·1	59·7	54·1	56·1	56·2
PRODUCING COUNTRIES (tea not locally produced)	14·5	9·8	8·1	9·4	8·6
TOTAL . .	849·3	866·4	845·0	877·6	902·4

* Largest tea consumer *per capita* in the world.

TEACHERS' ORGANIZATIONS. There are many organizations of teachers in Britain. Some are concerned with various subjects of the curricula and the best means of giving instruction in them. These bodies admit to membership teachers from every type of school, and their annals seldom reveal any matter of acute controversy. During the past year the associations of teachers of physical training have been engaged in discussing the new scheme for promoting bodily fitness, and teachers of music have carried on their campaign to ensure that skilled musicians shall be employed to teach their art in all schools. In other subjects, such as Latin, modern languages, history, geography, mathematics, and science, the associations concerned have been active in discussion but not demonstrative in public.

Teachers are organized also on a sectional basis, according to the type of institution in which they work, and according to their professional status in the institution. Thus we have associations of head masters in secondary schools, and an association of assistant masters, with corresponding associations of head mistresses and assistant mistresses. In the primary school field there are associations of head teachers and of class teachers, with two dissentient bodies of men and women respectively, who take divergent views on the question of 'equal pay'.

These sectional organizations are concerned with the protection of their own members in regard to such matters as salary, tenure, and conditions of work. By far the largest is the National Union of Teachers, which admits to its ranks teachers in every type of institution. By reason of its numbers and wealth, the union exercises considerable influence, and the most noteworthy event of the past year among teachers' organizations has been the effort to establish a federation of sectional associations and to create an institute of education for England and Wales on the lines of the educational institute of Scotland. The effort has not yet succeeded. The secondary school teachers have some fear of being swamped by the primary school teachers. Discerning minds in every section incline to the view that federation on a trades union model is impracticable, and that the only firm basis of unity is to be found in the professional register with its approved standards of admission.

During the year the sectional associations worked together to secure a new Superannuation Act which enables teachers on retirement to allocate part of their pension for the benefit of their wives or dependents. This extension of the original scheme is generally welcomed, as is also an extension of the national scheme of old age pensions which permits teachers (among others) to become voluntary contributors and secure benefits for their dependents on certain conditions set forth in the rules.

The National Union of Teachers, with the tacit support of other bodies, has also engaged in successful efforts to safeguard the position of teachers who, according to the law, are not required to take part in giving denominational religious instruction. A basis of agreement on this vexed question was reached at the end of the year. (F. R.)

TECHNICAL EDUCATION. Under this head are considered aspects of technical education in the major English-speaking countries of the world.

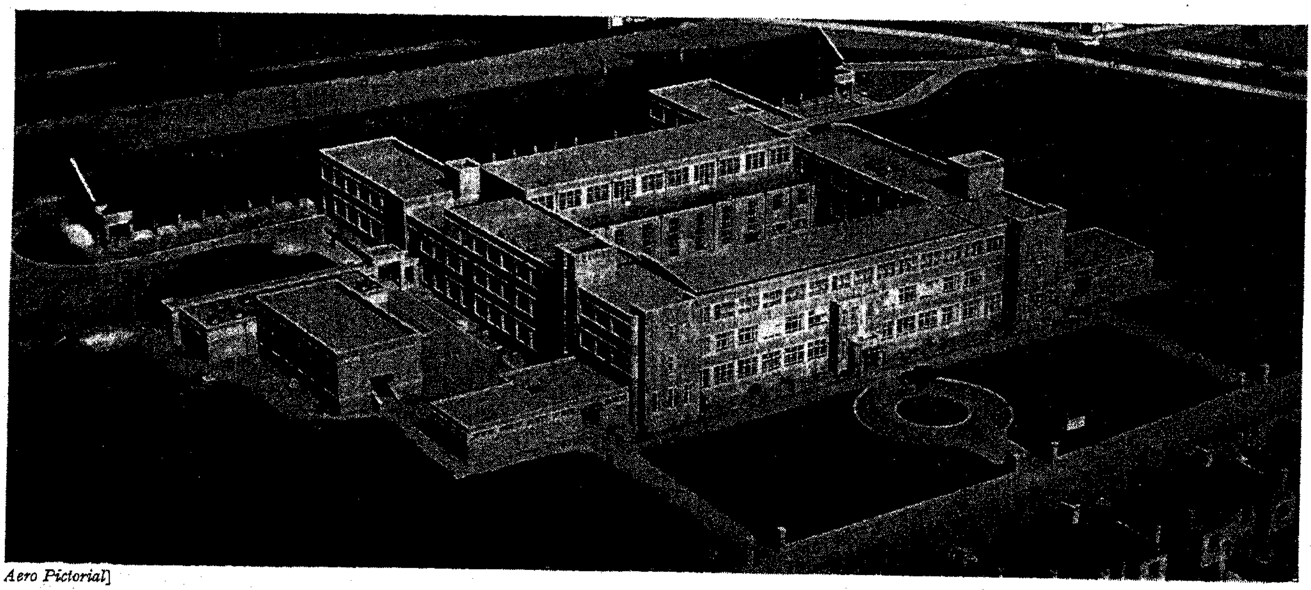
England and Wales.—The year 1937 witnessed the development of a deeper appreciation of the value of technical education—which comprises training for industry, commerce, citizenship, some aspects of professional and home life, and the provision of cultural classes. Leaders of thought stated that the main task to be accomplished in the sphere of higher education was the advancement of technical education.

The survey carried out in 1935 by H.M. Inspectors revealed the urgent need for better or more extensive accommodation. During the year 1936, proposals for new or improved accommodation (representing a total capital value of some £2¼ millions) were submitted to the Board of education and approved. Several large technical colleges recently erected in England were filled within a few weeks of the opening of the session in 1937.

The report of the board of education (1937) showed that the number of full-time students in technical institutions (other than those in attendance at art schools) in 1935–36 was 38,172 as compared with 34,346 in 1934–35, an increase of 3,826; and the number of part-time students was 1,044,958, an increase of 54,907. The great volume of technical training is therefore still centred in the system of evening technical, commercial, and continuation classes. This co-ordination of practical experience and scientific training has proved of inestimable value, not only to the many thousands of students concerned, but also in relation to the needs of industry and commerce. Further full-time instruction is desirable in technical and commercial education for students who are capable of profiting by it. Nearly 60 (59·3) per cent. of the total number of full-time senior students in technical institutes in 1936 had received their previous education in secondary schools.

Technical colleges are mainly controlled and financed by single local authorities, and attention was again drawn to the need for co-operation between neighbouring authorities in planning their provision for technical education to avoid overlapping and the duplication of premises, staff, and equipment.

In the examinations conducted under what are known as National Certificate schemes, the proportion of successes to entrants was remarkably consistent, and the effect of these courses of instruction on industrial life will probably be progressively increased.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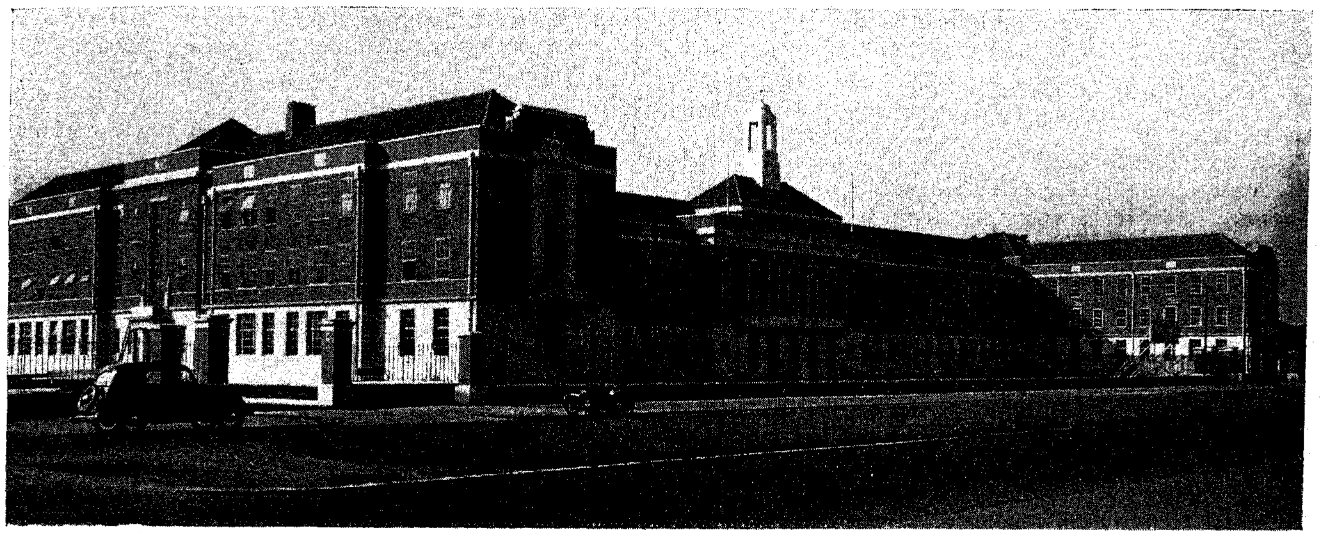
WILLESDEN TECHNICAL COLLEGE, NORTH-WEST LONDON



G. Marshal Smith]

SOUTH-EAST ESSEX TECHNICAL COLLEGE, SEEN FROM THE NORTH-EAST

Scotland.—In the central institutions of Scotland (under the administration of the Scottish Education Department) the number of full-time day students was 4,689 (including art) in the session ended July 31, 1936. Part-time day students numbered 3,301 and evening students 10,650.

Northern Ireland.—The number of students in attendance at technical schools and classes was between 23,000 and 24,000, of whom about 2,700 were in full-time attendance at junior technical and junior commercial schools. The number attending day courses lasting for a year or longer was 99 in 1936–37.

Ireland (*Eire*).—During the session 1935–36, the total number of students attending technical schools was 63,452, of whom 14,500 were in attendance at full-time or part-time courses.

British Defence and Police Forces.—The syllabus of the Royal Naval Engineering College was modified to keep pace with the development in engineering practice in the naval service, both in regard to steam turbine installation and to the internal-combustion engine. For this purpose new models and demonstration apparatus were obtained. At the same time, workshop machinery was replaced to keep abreast of modern methods of manufacture and repair.

The work of the Military College of Science, Woolwich, falls into two broad divisions: the training of artificers of the Royal Artillery who undergo a five-year course, and the various technical courses for officers and other ranks of all branches of the service. In the senior courses in 1937, 316 officers and 2,227 other ranks passed through the college as against 195 and 1,332 in 1914. The increase is largely due to developments in mechanized transport.

At the Halton Royal Air Force School of Technical Training, 421 aircraft apprentices completed their courses in the last term of 1937, and 97 wireless apprentices at the Electrical and Wireless School, Cranwell. During the year, the new workshops in the Service Training section at Halton were brought into use.

Progress was made at the Metropolitan Police College, Hendon, where selected candidates follow an 18 months' course that includes instruction in administrative problems, the prevention, detection, and investigation of crime, the management and use of mechanical equipment, and other subjects connected with their duties.

Australia.—The enrolment at the technical schools of New South Wales in 1935 was 19,959. Advisory committees have been formed in connexion with each course of technical instruction. The report of the Secretary of Public Instruction in Queensland (1937) stated that the number of students reached a higher figure than at any previous period, and that modern equipment was urgently needed in most of the colleges. The number of full-time students enrolled in 1936 was 3,658, and there were 11,523 part-time students. South Australia reported a growing faith in the value of technical education and a quickening of interest in all subjects. In Tasmania the year saw a considerable improvement in the appearance of the technical college buildings that had been reconditioned and repaired. A 26 per cent. increase in the admissions to junior schools was reported. In Victoria there was an increased demand for technical instruction. The enrolment for the first term of 1936 exceeded the enrolment for that of 1935 by over 3,500 students. The report of Western Australia called attention to the inadequate facilities for technical education throughout the Commonwealth. It was resolved in 1936 that the ministers should approach the Commonwealth for a grant of £2 millions for technical education and also an annual sum of £100,000. The number of individual students in attendance at the end of 1936 was 4,628, an increase of 484 on the corresponding enrolment for 1935.

Canada.—An interesting development in Canada in 1937 was the approval by the Dominion government of the expenditure of $1 million for the training of unemployed youths. The training to be given included forest conservation work, technical training in mining, rural training, and industrial apprenticeship.

India.—The technical schools and colleges of engineering sought the co-operation of large engineering works for the practical training of their students. Mr. Abbott and Mr. Wood in their report recommended that training should be concentrated on foremen, charge-hands, and similar workers. The opinion in India was that economic conditions could not be improved unless India were industrialized, and that a well-planned system of technical education was needed to give young men practical training in the use of modern tools and machinery.

New Zealand.—In 1936, 9,163 full-time students attended the technical institutions, an increase of 114 over the previous year. Dressmaking classes were established in 47 country centres. 12,481 students attended evening technical and part-time day classes.

The Union of South Africa.—The need for improved technical training was more fully realized in 1937, and considerable attention was given to the training of teachers. In 1935, the technical colleges of the Union enrolled 4,248 full-time and 16,651 part-time students. (T. B.)

BIBLIOGRAPHY: *Education in* 1936 (His Majesty's Stationery Office); *Pitman's Handbook of Commercial and Technical Education,* 1938; Reports of the Education Departments of the States and Dominions of the British Overseas Empire; *The Silent Social Revolution,* by G. A. N. Lowndes.

United States of America.—In the United States an outstanding event in technical education during 1937 was the increased Federal subsidy under the George-Deen Act. Supplementing the aid already available for training in agriculture, home economics, and trades and industries, the new Act goes further in its scope, and includes the distributive occupations. Greatly enlarged programmes are noted in the fields of work previously subsidized, and substantial beginnings are found in retail selling training and in other phases of the distributive occupations.

New building programmes for industrial education are in evidence in several cities, notably New York and Philadelphia. Courses have been developed to meet training needs in newly developing fields such as Diesel engines, air conditioning, and the electronics industry. Organized courses appeared during the year in training for public service occupations, such as police services, fire fighting, and motor-vehicle inspection. Significant also is the increase in training courses for technicians on a level above that of the skilled trades and below that of the engineering college, prevalent in many European countries, but found in few places in the United States. Many of the industrial schools have added courses for the training of semi-skilled operatives, below the skilled trades level.

Apprenticeship training programmes operated by industrial plants, or as a part of the public school system, (*i.e.* national free schools) have seen some growth, although this has been slow. Technical courses for out-of-school youth have received increased attention. The Federal emergency agencies dealing with youth, particularly the Civilian Conservation Corps and the National Youth Administration, have been active in carrying on and in stimulating such training programmes, and many municipal and State educational departments are working towards a better solution for this important problem. (L. A. E.)

TELEGRAPHY. The year 1937 was characterized by the development and practical application of previously known principles rather than by the introduction of epochal inventions.

Automatic Tie Line Switching.—This device provides a means whereby any one of a number of customers equipped with teleprinters may automatically transmit telegrams direct to the central telegraph office over one of the number of trunks. This arrangement is useful where the expense of direct lines from central office to each customer would be prohibitive.

Carrier Systems.—This method of securing a number of telegraph channels from a few line wires by means of electric currents of different frequencies has been improved to permit a further increase of the number of channels which may be secured from a given number of line wires.

Facsimile Transmission.—Facsimile transmission was given a new impetus by the successful application of a simplified method of reproduction. Gradations of scanning light reflected from original copy carried upon a revolving drum are transmitted as electrical impulses. At the receiving end these signals are amplified and applied through a stylus to mark electro-sensitive dry recording paper moving upon the drum of a synchronized receiving machine. The received copy requires no processing and is ready for immediate delivery.

Message Conveyors.—One of the methods by which messages are conveyed from point to point in large telegraph offices is by means of moving belts. Improvements in belt design have made it possible to increase their maximum speed from 500 to 1000ft. per minute.

Ocean Cables.—Improved vacuum tube amplifiers, measuring and balancing devices, repeaters, increased voltages, etc., have improved and stabilized operating conditions and afforded more efficient use of ocean cables. The use of direct multiplex channel circuits, operated by printer, between important cities on both sides of the Atlantic has increased.

Power Plants.—Mercury vapour tubes are utilized to provide rectifier units replacing expensive dynamo plants. Portable emergency power plants, consisting of a gas engine coupled to a generator, have undergone steady improvement.

Press Services.—An important development in connexion with telegraphic facilities furnished to press associations has been the establishing of circuits usually beginning and terminating at the headquarters of the association and serving a number of newspapers in distant cities. One of the important features of this type of circuit is that it permits any newspaper on the circuit which has transmitting facilities to cut the circuit at that point and send two separate stories simultaneously to all other stations.

Reperforator Switching.—Telegrams are relayed between printing telegraph circuits expeditiously and economically by a system of reperforators and intra-office circuits which require but one simple switchboard operation to replace manual reception, distribution, and re-transmission.

The Varioplex.—This device makes it possible for a group of subscribers economically to share the full transmission capacity of a group of telegraphic circuits which is available to all, and which is fully and equally shared among subscribers working directly with each other at any instant. This affords a most efficient use of trunk wire capacity.

(N. C.)

TELEPHONE. Many technical advances in the past eight years have led to the attainment of higher standards of telephone service. Notable among them are important improvements in the design of the telephone transmitter and receiver and other subscriber apparatus, and improvements and extensions in the line and radio facilities for long-distance communication. The use of dial telephone equipment in central offices has also been carried in most countries well beyond the point at which it stood in 1929. The present article will, in so far as is possible in a few words, bring up to date the information of that year.

The most spectacular telephonic advance, in that it has broken new ground, is to be found in the numerous overseas radio channels which are now operating on an international basis. The first of such channels was that between Great Britain and the United States. It is of the so-called long-wave type (westbound frequency is 68 kilocycles and eastbound 60 kilocycles), and was opened for service in 1927. Since then it has been supplemented by three short-wave channels. This group of circuits is the largest and perhaps the most important single overseas group. But the demand for international telephony has grown so rapidly that, within the decade, more than 175 overseas radio telephone circuits for the handling of public message business have been created, and cover the earth as a very substantial yet invisible network.

To-day, 98 per cent. of the world's telephones are interconnected. Behind this rapid advance in international telephony stand, of course, important developments in the instrumentalities of radio communication. Notable among these may be mentioned water-cooled vacuum tubes of large power, greatly improved antennas, and improved auxiliary devices for the more effective overcoming of the interference which is inevitably associated with radio transmission.

Paralleling these overseas extensions which have been made possible by the radio telephone, additions of very fundamental importance have been made to the long-distance land lines, both in Europe and in the United States. Whenever possible, these additions have taken the form of lead-covered cable, each cable containing several hundred distinct circuits. The advantages of the cable circuits as compared with open wire lines arise particularly from their increased electrical stability and freedom from failure because of storms, and hence increased reliability in service. By virtue of this important characteristic, the toll cable network of backbone circuits has contributed significantly to the maintaining and extending of a very rapid long-distance service.

In spite of the fact that the usual toll cable carries as many as two hundred to four hundred individual lines, the problem of multiplexing these lines by the 'carrier' principle has assumed economic importance in view of what we envisage as the future needs. The development of a very successful twelve-channel system has been effected and numerous installations are under way. As an additional instrumentality for providing more abundant long-distance circuits in the future, the so-called coaxial cable is now in its trial stages. In brief, it also operates on the multiplex or carrier principle, enabling two pairs of conductors (each pair consisting of a wire surrounded by a concentric pipe and transmitting in one direction only) to provide between two hundred and five hundred telephone channels, depending upon the range of the filters and the amplifying devices, or repeaters, with which the cable is equipped. This type of cable can also be used for the transmission of television programmes. It will be appreciated, of course, that in the case of the coaxial cable, by far the major portion of the development work has necessarily centred on the amplifying and filtering (or band-splitting) devices which are needed. The transmission loss of the cable is such that the message currents must be re-amplified every five to ten miles, while the filters used to separate the hundreds of messages from one another without extravagant waste of the frequency bands separating the channels represent the practicable limits of present-day refinements.

A very significant research programme of the decade just passed is that which has culminated in fundamental improvements in the basic instruments of telephony—the carbon transmitter, and the receiver. These improvements can be applied as readily to the combined hand-set as to the older wall and desk types. These developments yield superior results, partly because of better quality and partly because they make possible a higher level of transmission. Although not directly connected with improvement in the transmitter and receiver, it should be noted that the anti-sidetone type of subscriber's set has been accorded almost universal adoption within recent years.

The transformation of central office equipment from the manually operated to the dial-operated type has proceeded steadily in the leading countries of the world. As yet, no outstanding changes in the equipment have been described. An important new system known as the cross-bar system has, however, been completed and will shortly be available for detailed discussion.

From the subscriber's point of view, the net result of the improvements just cited—and all of them are of a major character—has been a steadily bettered service when considered from such dominant standpoints as cost, speed of service, and interruptions or failures due to equipment faults. The variety of services offered has also grown. Thus, by the recently inaugurated conference call, persons numbering up to 10 or 12 and scattered hundreds of miles apart can be assembled telephonically in a few minutes time, and can carry on a discussion as though seated around a table.

Increased Use in Great Britain.—During the year ended March 31, 1937, the latest for which complete figures are available, the use of the telephone in Great Britain became still further extended, owing partly to the continuance of trade improvement and partly to reductions made in 1936 in the charges for daytime long-distance trunk calls and business-line rentals, and to the concession of a free local call allowance on residential lines. Local calls approximated 1,882 millions, an increase of about 150 millions over the figure for 1935–36, while trunk calls totalled 99 against 88½ millions.

The number of telephone instruments in service at the end of 1937 exceeded 3 millions, the increase being by far the greatest ever recorded ; it took the service 40 years to reach the first million, and another nine to reach the second ; the third was added in six and a half years only. Residential subscribers accounted for about nine-tenths of the total increase in subscribers' lines during the year : they are now more numerous than the business subscribers ; while the number of telephones rented under the 'business small user tariff' is 190,000, or rather more than 20 per cent. of the total number of business subscribers.

The number of effective local calls originated during 1937 reached a total of 2,100 millions, compared with 1,880 millions in 1936, whilst inland trunk calls numbered 105 millions, compared with 96 millions in the previous year. The shilling night call, introduced in 1934, maintained its popularity, its number having been about 15 per cent. higher than in the previous year.

Other developments during 1937 included substantial progress towards the transfer of the system to automatic working ; 400 new automatic exchanges were opened, and there are now 2,450 exchanges of this type, rather more than half the total number of subscribers' telephones being thus connected. The 'speaking clock' (TIM) was responsible for nearly 50,000 calls per week; and the service introduced in June, by which automatic renters can make emergency calls (police, fire, etc.) by dialling '999', was used, on the average, 14,000 times monthly. The house exchange system, a service lately offered to subscribers, has been well supported. This combines the advantages of an internal communication system with those afforded by ordinary lines to the public exchange. Some 11,000 telephones of this type are in use on the 1,900 installations so far provided for subscribers.

The programme for the provision of a call office in every village on the mainland of Great Britain and Northern Ireland is now virtually completed, and the replacement of call offices in shops by street kiosks, available at all hours is actively progressing. There are now throughout the country some 48,000 public call offices, 27,000 being kiosks, of which a further 10,000 are to be provided. To serve the system, there were, at 31 March, 1937, 5,600 exchanges and 13½ million miles of wire, of which nearly 12 million miles are run underground. This very high proportion of underground plant, with its relative immunity from damage by storms, is a characteristic of the British system.

International Telephone Services.—In this field, progress continued at a steady pace. A submarine cable of modern design was laid between the east coast and Holland, and special equipment was brought into use on the Anglo-French telephone cables to augment the number of cross-Channel circuits. Calls with many European countries are increasing daily, and additional circuits are being brought into use. The scope of the radiotelephone was extended by the opening of new services to Jamaica, Iraq, and Malaya, and charges for calls to India, Egypt, Japan, and the Dutch East Indies, as well as for calls to the more distant parts of the United States of America and Canada were reduced.

During the year, almost a thousand programmes were broadcast by means of the continental and overseas telephone services operated by the Post Office. On coronation day, 21 overseas broadcasts were successfully handled in addition to the 'Empire homage' programme, which was relayed in both directions over the Empire radiotelephone channels. The Abbey ceremony and descriptions of the procession in 10 languages were also transmitted to 12 continental countries; and on Christmas Day, the Post Office radiotelephone services carried His Majesty's voice to the most distant parts of the Empire and the United States of America.

TELESCOPES. Of the large telescopes planned for use at observatories throughout the world, the following are in course of construction:

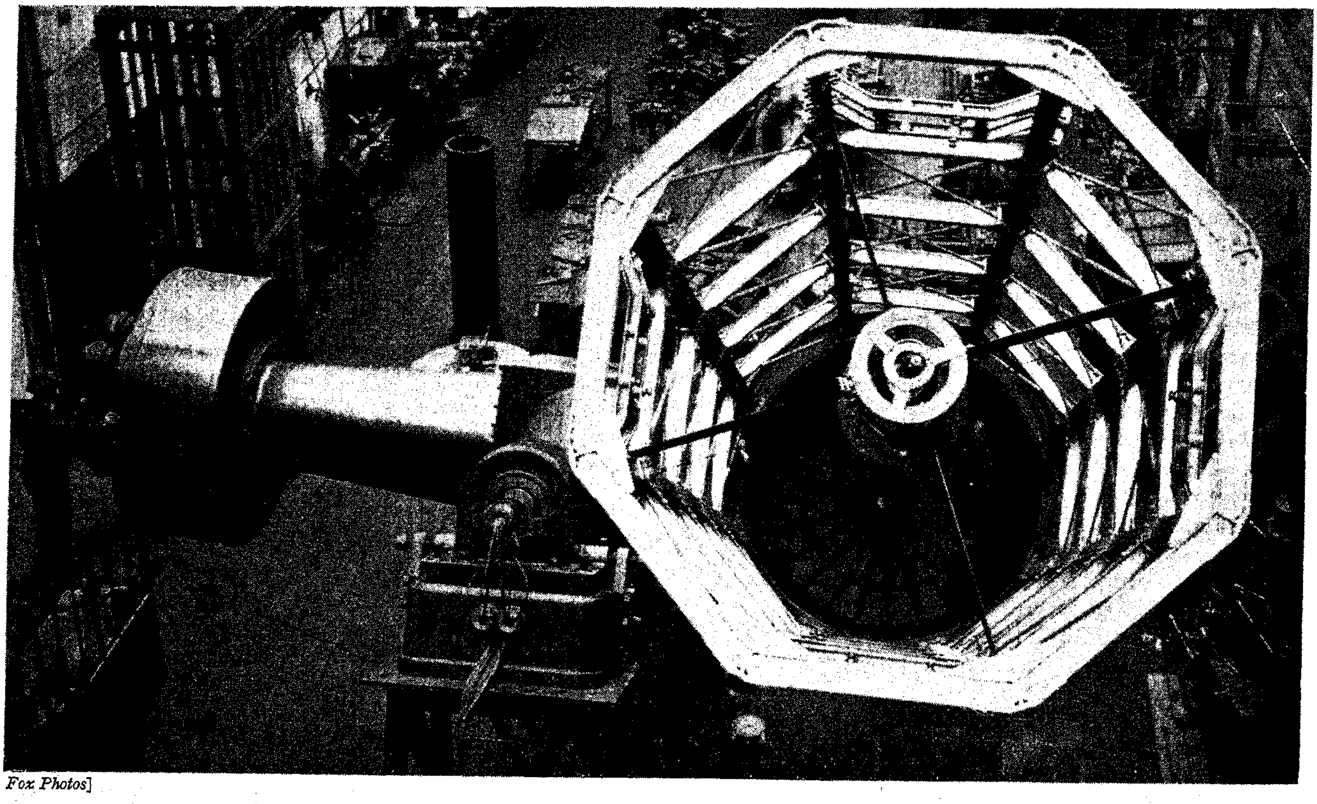
(1) A 200-in. reflecting telescope (F 3·3) of the California Institute of Technology, designed in co-operation with the Mount Wilson observatory of the Carnegie Institution of Washington, for use on Palomar mountain, in southern California, where the steel dome, 135ft. in diameter, is under erection. The front surface of the 200-in. disc has been ground to nearly the required depth, and the telescope tube, 60ft. long and 22ft. in diameter, is completed. Work is well advanced upon the mounting, including the massive crescent-shaped frame which will provide the main bearing for the telescope through a system of oil films maintained under high pressure. A complete model of the telescope (scale 1 : 10) with optical parts has been built and tested.

(2) An 82-in. reflecting telescope (F 4) of the McDonald observatory of the University of Texas in co-operation with the Yerkes observatory of the University of Chicago, for use on Mount Locke, in Western Texas. Buildings, mounting, and several auxiliary instruments are completed, but optical work is still in progress.

(3) A 74-in. reflecting telescope (F 4·9) to be installed at the Radcliffe observatory, Pretoria, South Africa. Mirror disc recently cast and mounting under construction. Auxiliary instruments under design.

(4) A 21-in. twin photographic refracting telescope (F 7) of the Lick observatory of the University of California, for use on Mount Hamilton, California. Optical figuring of the lenses has begun and mounting is under construction.

The most important development of the year has been the growing use of the type of telescope first designed by Bernhard Schmidt of Germany, and its adaptation for use in spectrographic cameras. It consists of a concave spherical mirror with a thin glass plate placed in the incident beam of light specially figured to correct the aberration. Aperture ratios as high as F 1 may be obtained in this way, and the combination gives very high photographic efficiency.



Fox Photos]

THE TUBE OF THE WORLD'S SECOND LARGEST TELESCOPE COMPLETED IN 1937 AT WALKERGATE-ON-TYNE FOR THE RADCLIFFE OBSERVATORY, PRETORIA

With the use of plates or films curved to the focal radius a field of 10° or more may be obtained in excellent definition. Two such telescopes, one with an aperture of 44cm., at Bergedorf, Germany, and one with an aperture of 18in. on Palomar mountain, California, are in regular use. A considerably larger instrument is under consideration for the Palomar mountain observatory as an adjunct to the 200-in. telescope.

TELEVISION. From about 1926 onwards, experimental transmissions of what is usually termed 'low definition' television were carried out in several countries. The standards used varied between 30 and 120 lines per picture, with a frame frequency as low as 12½ per second in some cases. Such transmissions have never been developed successfully on a commercial basis, but they resulted in attention being paid to higher standards of definition, progressing in stages from 120 lines up to some 400 or more.

At the beginning of 1937, the only practical use to which television had been put was for a public broadcast service in London using a high standard of definition. Experimental broadcast services, also using high standards of definition, were in operation in several countries, notably the United States, Germany, and France, to which further reference will be made. Other possible uses were under consideration, but had not been developed to any considerable extent.

Great Britain.—In England, the broadcast television service was opened by the British Broadcasting Corporation on Nov. 2, 1936, and at the same time suitable receivers were made available for purchase by the public. The station was situated at the Alexandra Palace in the London area, approximately 5m. north of Charing Cross, and some 300ft. above sea-level. The normal range was about 30m., although reception in certain directions up to 100m. or more has been recorded.

At the London Television Station duplicate plant was installed, following two distinct systems, which at first were used during alternate weeks. One system, developed by the Marconi–E.M.I. Television Company, employed interlaced scanning with 405 lines giving 25 complete pictures per second. According to this system, the number of frames per second is 50, each frame consisting of 202½ lines, the lines of successive frames being interlaced. Thus the effective number of repetitions, from the point of view of picture steadiness, was 50 per second, while the amount of detail transmitted corresponded to 405 lines, the equivalent modulation band width being only one-half that necessary to transmit 405 lines per picture for 50 pictures per second sequential scanning. The method used for transmitting both living subjects and cinematograph film depended on an electron tube device, based fundamentally on a suggestion by Campbell Swinton in a letter to *Nature* in 1908, and given practical effect in an American device known as the 'Iconoscope'. The tubes used in England were developed and manufactured by the research department of the Marconi–E.M.I. Television Company in London, and bear the trade name of 'Emitron'. They contain a screen measuring about 5in. by 4in. (12·7cm. by 10·2cm.), consisting of a mosaic of minute light sensitive cells on to which an image of the scene to be televised is focused by an optical system similar to that used in an ordinary photographic camera. The screen is scanned by a fine electron beam, which has the effect of setting up currents corresponding to the amount of light falling on each element forming the mosaic. The currents derived from the electron tube are transmitted, together with electric pulses to provide the necessary synchronization between the transmitting apparatus and the receivers. The apparatus will operate satisfactorily either in natural or artificial light, the technique used in the television studio being somewhat similar to that in a film studio. The apparatus for reproducing the sound is similar to that used for ordinary broadcasting.

The second system, used as stated during alternate weeks, was developed by the Baird Television Company, and produced a 240-line picture with 25 pictures per second, sequentially scanned. The frame frequency in this case was therefore 25 per second. Scanning was carried out by mechanical devices consisting of an adaptation of scanning discs of the Nipkow type. One method of televising from a studio consisted of photographing the scene on a cinematograph film, with a special process of rapid automatic development, immediately afterwards scanning the film, under water, through the walls of a glass-sided tank. The delay between the instant of photographing the scene and transmitting it was somewhat less than one minute. In the case of this process the sound accompanying the television scene was also recorded on the film and reproduced by the normal method used for an ordinary sound film. The use of this second system for the public service in London was discontinued on Feb. 8, 1937, and the service was continued, using exclusively a standard of 405 lines 50 frames interlaced scanning.

The vision and accompanying sound signals were radiated by two ultra-short wave transmitters feeding two separate aerial arrays mounted, one above the other, on a common 300-ft. steel mast, the vision array being the uppermost.

The wavelengths used for the vision and sound transmitters were 45 megacycles per second (6·67 metres) and 41·5 megacycles per second (7·23 metres) respectively. The peak power of the vision transmitter was 17 kilowatts and the unmodulated carrier power of the sound transmitter 3 kilowatts.

The Marconi–E.M.I. system was further developed during 1937 to enable events to be televised which took place at some considerable distance from the main transmitter. The first notable event of this kind to be televised was the coronation procession in London on May 12, 1937. Others were the International Lawn Tennis Matches at Wimbledon, near London, in June, and the Armistice Day ceremony in London in November. For the latter, an improved form of electron tube was used in the camera, allowing distant scenes to be transmitted effectively.

Two alternative methods have been employed for connecting the television apparatus to the main vision transmitter at Alexandra Palace. One consisted of a specially designed underground cable, with two air-spaced conductors capable of passing the wide band of frequencies (about two and a half megacycles per second) necessary for obtaining the required degree of picture definition. The other method, used for events where a cable connexion was not possible for economic reasons, involved the use of a low-power mobile television transmitting unit operating on a wavelength of 64 megacycles per second (4·69 metres) in conjunction with a radio receiver installed in the same building as the main vision transmitter.

During the year, some 15 firms placed receivers on the market in London, the average size of the reproduced picture being approximately 8in. by 10in. (20·32cm. by 25·4cm).

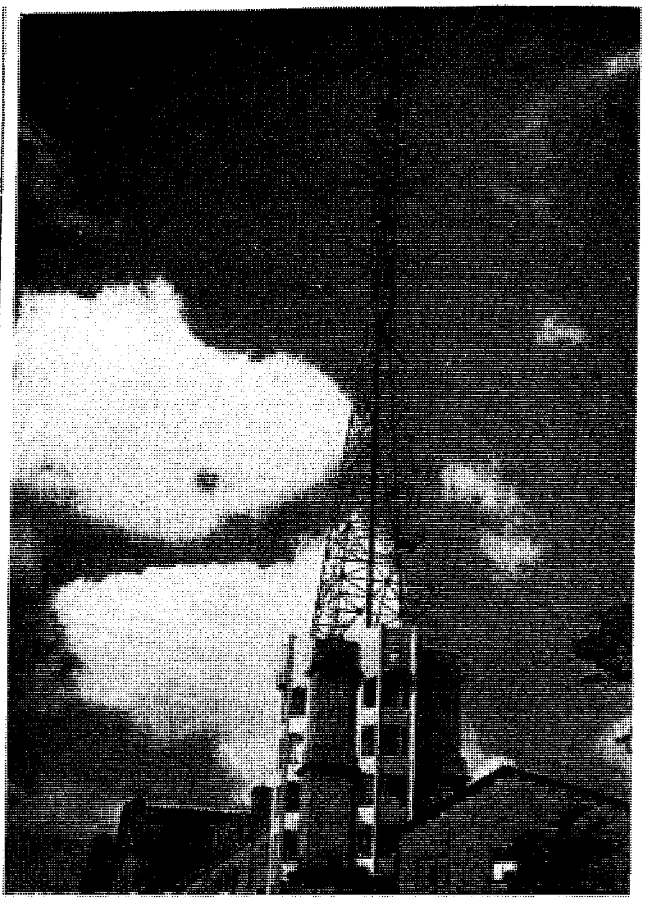
United States.—In the United States of America, an experimental service, not intended for general public reception, was operated by the National Broadcasting Company during the latter part of 1937. A large number of receivers was distributed to interested persons for observation purposes. The transmitter aerial was situated on the Empire State Building, which is approximately 1,250ft. high, while the studio was situated in the National Broadcasting Company's Headquarters in Radio City. Experimental programmes were transmitted, using, at first, 343 lines per picture with 30 pictures per second interlaced, giving a repetition frequency of 60 per second; later, the number of lines was increased to 441. The peak power of the vision transmitter was 30 kilowatts. The system used for the pick-up depended on an electron camera device developed by the Radio Corporation of America, differing somewhat from that used in England. A frequency of 49·75 megacycles per second (6·03 metres) was used for transmitting vision and 52·0 megacycles per second (5·77 metres) for the accompanying sound.

The signals, although basically similar in form to those used in England, differed particularly in that their polarity was reversed. That is to say, in the case of the American method, the synchronizing impulses raised the transmitter output to a maximum, while in the English case they reduced it to zero. The sense of the vision signals representing tonal gradations from black to white was also similarly reversed.

The studio was connected to the main transmitter by a special cable as well as by an ultra-short wave link transmitter. Towards the end of the year, the National Broadcasting Company acquired mobile equipment for transmitting events not occurring in the studio. Also towards the end of the year the Columbia Broadcasting System of America announced the construction of a television station in New York, the aerial of which was to be mounted on the summit of the Chrysler Building. It was stated that the peak power of the vision transmitter would be 30 kilowatts, and that the station would be ready for operation during 1938.

Germany.—In Germany experimental transmissions have been carried out for some years from the Funkturm at Witzleben, using 180 lines and 25 frames per second. Vision was transmitted on 44·3 megacycles per second (6·77 metres) and sound on 42·5 megacycles per second (7·06 metres). Receivers were not on sale to the public, but demonstrations were given at a series of viewing rooms in various parts of Berlin. Experimental work was carried out during the year by the German Post Office and several private firms on systems with a higher standard of definition. It has been announced that a new standard of 441 lines, with a frame frequency of 50 per second, interlaced, has now been adopted, and that further transmitters are being built to be in operation in 1938. One of these was to be situated on the summit of the Brocken, the second on the Feldberg in the Taunus Mountains, and the third in the Rhineland.

France.—In France transmissions have been made for some time past from the Eiffel Tower, with both 60 and 180 lines and 25 frames per second. Unlike the practice in other countries, the accompanying sound has been radiated on the ordinary broadcasting wave of 1,456 kilocycles per second (206·0 metres). During 1937, a new high-definition transmitter, having a peak power of 30 kilowatts, was installed in the Eiffel Tower Station. This uses 455 lines, 50 frames per second interlaced, giving 25 complete pictures per second. This transmitter uses a frequency of 46 megacycles per second (6·52 metres), and in this case the accompanying sound is also transmitted on an ultra-short wave, namely, 42 megacycles per second (7·14 metres). During the Paris Exhibition of 1937, high definition demonstrations were given, using electron camera apparatus.



British Broadcasting Corporation]

LONDON TELEVISION STATION: MAST SUPPORTING SOUND AND VISION AERIALS

During 1937, the possibility of developing television using a large screen, suitable for cinemas and theatres, was under consideration, notably in England, and several firms were working on apparatus with this object in view. (N. As.)

TEMPLE, WILLIAM: *see* YORK, ARCHBISHOP OF.

TENNESSEE: *see* UNITED STATES OF AMERICA.

TENNESSEE VALLEY AUTHORITY. Created by an Act of the Congress of the United States of America in 1933 as a corporation to provide for the unified development of a watershed area some 40,000sq.m. in extent, or roughly the size of England, in order to make full use of all its resources, the Tennessee Valley Authority has been conducting a unique experiment in government planning and operation. In 1937, the fourth year of its existence, two large dams—the Norris dam, a storage dam on one of the tributaries, and Wheeler dam on the main river—were completed and put into operation while construction was materially advanced on four other dams, three of them—Pickwick Landing, Guntersville, and Chickamauga—on the main river, and the fourth, Hiwassee, on another tributary. In addition, plans were developed for Gilbertsville dam, the largest and nearest to the mouth of the river.

Flood control is perhaps the most impressive element of the plans at the present stage; the Gilbertsville reservoir, for instance, will have a storage capacity of 4,600,000 acre-feet for flood control alone, and will reduce flood flows on the lower Ohio and Mississippi rivers by 200,000cu.ft. per second, thus materially aiding the flood protection works on the Mississippi river. Like all other Authority dams, this will serve a multiplicity of interests, including navigation and power development as well as flood control. A demonstration of the value of the system for flood control was given during the great winter flood of 1937, when the Norris and Wheeler dams alone, operated for flood control, reduced the flow in the Ohio and Mississippi rivers by 32,000cu.ft. per second, and materially assisted in saving Cairo from flooding.

The creation of water power incident to the construction of the dams is another purpose of importance. The two dams completed in 1937, together with the existing Wilson dam taken over by the Authority, provide an electrical capacity of 350,000kw. with a firm power capacity of 260,000kw. The Authority has also promoted greatly the rural electrification of the area, and, through experimentation, has developed additional uses for electricity, such as hay-drying equipment and freezing equipment for agricultural products. Another important activity has been the development of phosphate fertilizer in connexion with the use of the electric furnace. Phosphate fertilizers of higher concentration have been developed, including a metaphosphate containing from 60 to 70 per cent. of plant food. Linked with the fertilizer programme has been soil conservation, including the encouragement of diversification in agriculture, terracing of hillsides, encouragement of animal husbandry, and the reforestation of denuded areas.

Other developmental work has been the investigation of the mineral resources of the area, the development of native kaolins for use in high-grade pottery in connexion with the electrical furnace, and the encouragement of co-operatives for collecting, grading, and marketing agricultural products. The encouragement of recreational areas, for which the lakes created by the construction of the dams are a contributing factor, is also an important activity.

In all this activity the Authority has co-operated with numerous Federal agencies, seven State governments, and hundreds of local and county governments: an interesting experiment in co-operation which holds out good prospects of success. (A. E. M.)

TENNIS. At a rough estimate it would seem that there are about one thousand regular players of the historical game of 'real' tennis in the British Isles to-day. The original courts, and many of the original competitions, still survive.

Supreme as a tennis player in Great Britain at the present time is L. Lees, open and amateur champion. The professional champion is J. Dear. That great sportsman, Lord Aberdare, is the holder of the Gold Racket, while W. D. Macpherson is the present holder of the Silver Racket. The University match was won by Oxford in 1937, for the sixth time in succession, Cambridge now having 43 wins to Oxford's 30. The world champion is P. Etchebaster, of France, who has held the title since 1928, though a serious challenge is in being from O. Phipps, the American champion.

TENNIS, LAWN : *see* LAWN TENNIS.

TERRITORIAL ARMY. The Territorial Army of Great Britain is composed of civilians who volunteer for military training on a four years' engagement, with the option of extending it. The normal age-limits are between 18 and 38, but youths of 17 may enlist with the consent of their parents, while it has been recently decided that men up to 50 can be taken for home defence in the anti-aircraft units. With the latter exception the members of the Territorial Army now engage for general service if the force is embodied in time of national emergency, whereas before the War they undertook an obligation only for home defence. The units are administered by county associations, but their training is organized, under the direction of the War Office, by the military commands of the areas in which they are situated. The training comprises an annual camp of 15 days' duration and, during the rest of the year, a minimum of 40 obligatory drills in the first year and 20 in subsequent years. Men who cannot manage to attend for the full duration of the camp may come for eight days on condition that they do ten extra 'drills'. (A 'drill' is the name given to a period of one hour's instruction at the unit's drill-hall, or headquarters.) A bounty of £3 is paid to all who perform these obligations, with an additional shilling for each drill up to 30, beyond the minimum number. All men who reach a prescribed standard in weapon training receive a further grant of 10 shillings, those who qualify as specialists an alternative grant of 20 shillings, and N.C.O.s who qualify as instructors an additional grant of the same amount. While training in camp, officers and men are paid at Army rates.

Until the past few years the strength of the Territorial Army was in a gradual decline, owing partly to the peacefulness of the international outlook and partly to the parsimonious treatment which it received—an effect which persisted longer. By 1935 it had shrunk to a strength of barely 130,000 on an establishment of 175,000. But a turn of the tide came when the growth of dangers abroad was followed by an improvement of the conditions of service. At the end of 1937 the strength was just over 160,000, while the establishment had been raised to 200,000—largely to meet the increased needs of anti-aircraft defence. For the Territorial Army has taken over the responsibility for the ground defence, by guns and searchlights, of Great Britain against air attack; and, also, of its coast defence. Of the 14 infantry divisions in which it is organized, two have already been converted into anti-aircraft divisions, and it is likely that the conversion of another two may follow. While the infantry divisions are organized complete with the normal proportions of artillery, engineers, signals, and administrative services, they lack modern equipment, having as yet no armoured vehicles, no anti-tank weapons, and no light machine-guns of post-war type. Steps are now being taken to repair these deficiencies, and to provide them with at least a sprinkling of up-to-date weapons without waiting until the Regular forces have been completely re-equipped.

Since Mr. Hore-Belisha became secretary of State for war in the summer of 1937, a series of measures have been introduced to enhance the status of the Territorial Army. Its director-general has been raised to the Army Council, and a Territorial officer appointed as his deputy, with the rank of major-general. Officers, whether Regular or Territorial, who command brigades will have the title of brigadier, like those who command Regular brigades—instead of being merely colonels. The former restriction on the number of Territorial officers who might be given such commands has been abolished, while the command of divisions has at last been opened to them. Entry to the Staff College and to the Imperial Defence College has also been opened. Furthermore, Regulars who serve with the Territorial Army as adjutants and sergeant-majors will henceforth be paid at the same rates as those of Regular units, thus encouraging the best instructors to devote themselves to the task of training the citizen-soldier.

(B. H. L. H.)

TEXAS : *see* UNITED STATES OF AMERICA.

TEXTILE INDUSTRY, THE. Market prospects turned sharply downwards early in September and continued weak to the end of 1937. Business recession in the United States combined with the Sino-Japanese War and international political unsettlement to reduce commodity prices substantially, destroyed business confidence, and checked demand. On the side of supply, a record crop of American cotton of 18,746,000 bales (of 500lb.) with carry-over of 6,268,000 bales and a world crop of 51,400,000 bales against a world consumption not expected to reach 31 million bales brought prices at times below 8 cents a pound 'middling' at New York as against 12–13 cents a year before. Acute shortage of wool towards the end of the previous buying season forced prices of all grades to high levels (64s warp tops Bradford 40*d.* a pound) in January, particularly crossbreds. With a negligible increase of the world clip of about 1 per cent., but reduced demand, new clip prices broke in September–October (64s warp tops 28*d.*) but recovered (to 31*d.*) later. A large jute crop of 8,617,000 bales, produced in spite of acreage restriction efforts by the Bengal government, was offset by abandonment of long-standing restriction of production by the Indian Jute Mills Association in face of competition of new 'outside' mills, together with good demand based on prosperity of 1936/37 and large world crops. Jute prices remained firm throughout the year, and industries active, though Dundee made many complaints to the government against severe and growing competition from Calcutta mills. Flax prices tended upwards throughout the year under the control of the U.S.S.R. monopoly, but mill activity declined towards the end of the year. Hemps have maintained the general level of prices, Italy having almost ceased to supply abroad. The Kenya and Tanganyika sisal crops gave those territories a record return. Spinning, manufacturing, finishing, hosiery, came under the same influences, particularly the weak or uncertain raw material markets. The United Kingdom maintained a strong home market but, as stated, demand declined in the United States.

Organization.—The British Spindles Board, under the Cotton Spinning Industry Act, operated to eliminate possibly 4 million spindles ('mule equivalent'), and legal mutual price agreements on margins for yarn prices have so far stood the test of reduced demand. The British cotton industry is seeking comprehensive statutory powers of compulsion for reorganization. The United States textiles industries have so far largely maintained the 'New Deal' working conditions of production and wages. The Australian, New Zealand, and South African Governments have passed Acts for a levy of 6*d.* per bale for wool publicity and wool research, and an International Wool Secretariat has been formed.

Fibres.—Outstanding technically is the further rise in world production of rayon staple fibre, likely to be of the order of 540 million lb. against 299 millions in 1936. Italy, Germany, and Japan are the leading producers, because those countries are aiming at greater economic self-sufficiency. The United States output is about 17 million lb. and the United Kingdom 29 million lb. The costs and price have been reduced, Courtaulds 'Fibro,' 1·5in. staple 1·5 denier, being 10*d.* a pound against 11*d.*

The world production of rayon (excluding staple fibre) is expected to have reached about 1,200 million lb. against 998 million lb. in 1936, Japan having now exceeded the United States figure of about 320 million lb. The United Kingdom production was about 120 million lb. in 1937. Attention continues to be given to refinements of properties. Artificial fibres are being diversified, and 'artificial wools' have appeared. The Lanital filament or fibre of the Italian concern Snia Viscosa is of casein from skim milk. Production is estimated at 1,541,000 kilograms, but little or no interest is apparent elsewhere. Germany has provided Lanusa, Artilana, Vistra XT, Cuprama staple fibre, and there are many others having crimp, loftiness, dyeing, moisture, or resilience properties imitating wool, but in no case felting.

Textile Processes.—Detail refinements in textile processes, control of processes, machinery, and machine driving, particularly electrical, are innumerable, but in no case revolutionary except over a longer period. Some main changes proceeding or in prospect are: *Cotton:* single-process opening; stream-line air-flow cotton cleaning of the British Industry Research Association; 'high-draft' reducing the number of processes; substitution of ring frames for mules, and large package spinning, high-speed winding, or warping, or slasher sizing; automatic looms. *Woollen:* pneumatic conveying and cleaning; ring spinning; automatic looms. *Worsted:* suint scouring and scouring effluent treatments; intersecting gill boxes; mechanical doffing spinning frames; rubberized low-twist yarns of the Wool Industries Research Association; automatic looms; new methods of milling, and of permanent extension; 'super-contraction,' or setting depending on new chemical knowledge of wool. *Jute:* roll-forming instead of cans; high-speed spinning; stationary-slay looms, or automatic shuttle changing or bobbin-changing looms with automatic pirn winding. *Flax:* mechanized and controlled production of fibre from straw, including tank duplex netting; mechanical dressing. *Rayon and Silk:* high-speed single-process crêpe-twisting, sizing, and setting; new automatic shuttle-changing looms. *Hosiery:* many new machine stitch and patterning developments; single-unit or single operation full-fashioned stocking frames; use of new fine elastic yarns. *Dyeing, Finishing, Printing, etc.:* new dyes, particularly vats, azoics, naphthols, acetate dyes and fixing agents; new detergents or wetting agents, etc.; new permanent finish substances, including anti-crease treatment with synthetic resin materials; other resin treatment of permanently starched goods, etc.; stiffening of collars, etc., with thermo-plastic interwoven acetate threads or vinyl dressings; alkali-soluble cellulose finishing materials; permanent water-repellency by chemical combination under heat treatment, using velan P.F. for resistance to wet marking or staining; rubber, rubber latex, and synthetic rubber (neoprene) proofing; new 'unshrinkable' finishes for woollen knit goods, or wool fibres, or yarn, using chlorine, bromine, or sulphuryl chloride; guaranteed zero-shrunk cotton and linen fabrics, or guaranteed quality-tested rayon fabrics. In all wet processes there is extension of hydrogen ion (*p*H) control, as well as thermostatic control. (H. C. BA.)

(*See* also COTTON; FLAX AND LINEN; RAYON; WOOL; etc.)

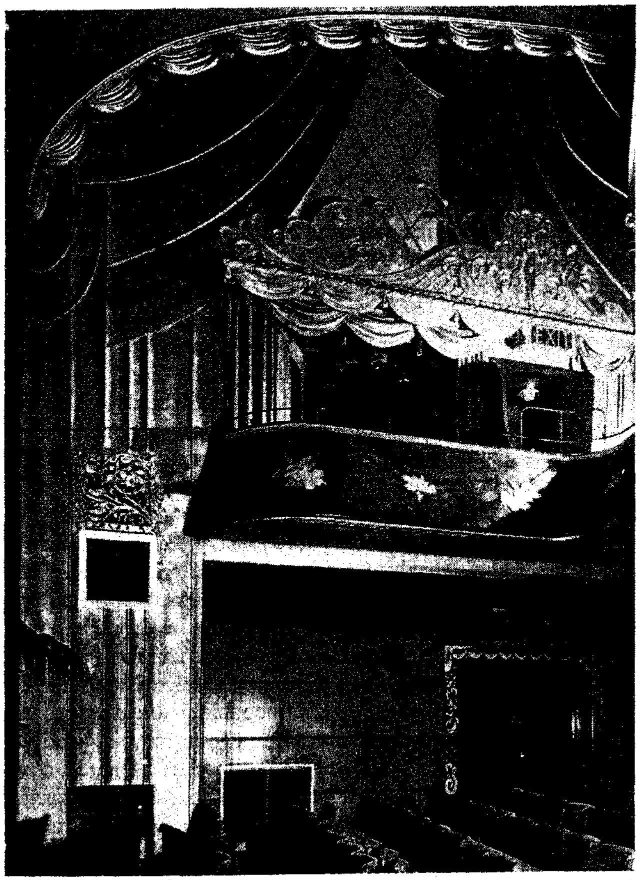
THEATRE. The chief playwright of 1937 in the English theatre was Mr. J. B. Priestley, who, in the autumn of the year, had three new plays running simultaneously in the West End of London, a feat not paralleled since, before the War, Mr. Somerset Maugham was turning out his fashionable light comedies, as richly stuffed with epigrams as a cake with currants. Epigrams, easily made by the practised hand, are no longer in fashion. Mr. Priestley substitutes philosophy for aphorism, and does not fail to attract the modern audience by this severer course.

His three plays, *Time and the Conways, I Have Been Here*

Before, and *People at Sea,* arrived in that order, both in time and in merit. The first two linked, in terms of vivid, theatrical effect, a philosophy of Time with the lives of people oppressed by circumstance. The idea was to give ground for hope by stressing the fact that Time's seemingly remorseless action may be less real than we think. Mr. Priestley's notions, having much in common with those of such thinkers as Ouspenski and Dunne, need not be challenged here as philosophy: considered as sources of drama, they proved fruitful indeed, yielded two of the best plays of the year, and evoked some of the best acting. Especially notable was Mr. Wilfred Lawson's powerful and poignant performance in *I Have Been Here Before.*

Mr. St. John Ervine returned to the office of dramatist with *Robert's Wife,* which might be called a 'problem' play, had not that title tended to disappear. The piece raised issues of social policy in a brusque, challenging way. Our attitudes to peace and war, and more especially to the equality of the sexes when professional interests clash, were matters under vigorous discussion. Miss Edith Evans and Mr. Owen Nares were in excellent form as chief parties to the argument.

A year which took from us Sir James Barrie inflicted a severe loss on the stage. It was a pity that Barrie's life, with its many successes, should have ended with a failure. The public did not long support *The Boy David,* the Biblical piece which he had written for Miss Elizabeth Bergner. That actress gave a lovely performance of the Jewish leader emerging, still a stripling, from his hungry home. The play was uneven, but had some characteristically charming passages. Probably it would have enjoyed a better run if it had not been so lavishly handled. At a smaller theatre, with a cheaper production and lower running costs, it might have lasted longer.



Architecture Illustrated]

PART OF THE AUDITORIUM OF THE NEW PRINCE OF WALES THEATRE, LONDON. ROBERT CROMIE, F.R.I.B.A., ARCHITECT

Shakespeare in England and Europe.—Another sad loss was that of Miss Lilian Baylis, the manager of the Old Vic and Sadler's Wells, and a wonderful pioneer of classics for the million. Control of the Old Vic had somewhat passed out of her hands: at least, she was, at the end entrusting a great deal to Mr. Tyrone Guthrie, a brilliant producer who altered the policy of the Old Vic in some ways and tried to raise its status from that of a good local institution with a respectable resident company to one of international repute. He could command the services of many stars as guest-players, and the greatest were glad to work for him.

Mr Laurence Olivier's *Hamlet* was perhaps the chief achievement of the year at the Old Vic, and the quality of this production and performance was recognized by the request to repeat them in the courtyard of Elsinore, near Copenhagen. The compliment of this invitation was gladly accepted, and the whole company went out to Denmark to perform Hamlet's tragedy on the site of the castle he had known. (The Elsinore castle of to-day was built long after the original Amleth's day, but was contemporary with Shakespeare's writing of the play.) Despite some unkindly weather, the visit was a great success, and the Danish writers were most cordial in praise of the English troupe. The Danes, being accustomed to rather stiffer and more ceremonial playing of Shakespeare, especially praised the naturalism and fluid, unforced humanity of the English mode of acting.

Mr. Guthrie added to the Old Vic's programme by initiating a country festival—at the beginning of September. The chosen town was the Derbyshire Spa of Buxton, and the programme, though austere, proved very popular, and it is likely that this parallel to the Malvern Festival will continue to be held. The Malvern Festival was not as attractive as usual. Mr. Shaw had nothing new for us, but Sir Cedric Hardwicke appeared therein in a new comedy and gave distinction to the occasion.

Although Mr. Shaw provided no new play this year, he offered a revised and most Shavian ending of Shakespeare's *Cymbeline.* Shakespeare, who became unusually popular in New York in 1937, was once more much honoured with profitable performance and not as a national hero only. There were splendid audiences all the summer at Stratford, and Mr. Gielgud's production of *Richard II* in London in the autumn was much approved. Mr. Carroll's open-air theatre was harassed by uncertain weather but had some fine productions.

National Theatre and English Substitutes.—Mr. Gielgud's winter programme of *Richard II, The School for Scandal,* followed by Chekhov's *The Three Sisters* and *The Merchant of Venice,* showed that private enterprise could render the services which others expect of a National Theatre. The site for a National Theatre was purchased by the responsible committee in South Kensington, a move which evoked some criticism of the site and general discussion of the need for such an institution. There is no sign of the National Theatre being immediately built. Far more money will have to be raised by voluntary effort before the foundation can be laid.

A word should be also said for the splendid season of modern classics given by Mr. Anmer Hall at the Westminster Theatre, culminating in a fine production of Mr. Eugene O'Neill's immense Americo-Hellenic tragedy, *Mourning Becomes Electra.* Here, too, was a worthy substitute for the work of a National Theatre. In this

Rex Whistler].

A SCENE FROM LAURENCE HOUSMAN'S PLAY 'VICTORIA REGINA' PRODUCED IN LONDON IN 1937, THE CENTENARY YEAR OF THE QUEEN'S ACCESSION, WITH SETTINGS BY REX WHISTLER

Miss Beatrix Lehmann established once more her claim to be an actress of unusual subtlety and power. Mr. Hall also offered his theatre to the young voices of The Group Theatre, who are experimenting with a new species of poetic and satiric drama.

Distinguished Visitors.—Among London's distinguished visitors during the year were the Habima Players, a Jewish team who began their apprenticeship to the theatre twenty years ago under the best possible tuition, that of the Moscow Art Theatre. Later on they moved to the Jewish National Home and set up their base in Palestine, from which they have toured extensively. They bring to a varied repertory a wonderfully graphic team-work with a curious symphony of intonations and a trained harmony of movement which suggest the art of ballet as the source of much of their technique. That they act only in the Hebrew tongue is a considerable handicap to popular reception, but so vivid is their work that, in a play of picturesque action, the language difficulty is reduced to a minimum. At the close of the year this Jewish company received and accepted the astonishing compliment of an invitation from Dr. Goebbels, and went off to perform in Germany.

Notable Successes.—Among the dramatists to succeed in light comedy were Mr. Gerald Savory and Mr. Terence Rattigan, authors of *George and Margaret*, and *French Without Tears*, two successes of the year. Producers to win or confirm their repute were Mr. Michael Macowan, Mr. Murray Macdonald, and Miss Irene Hentschel. Players who did remarkable work were Mr. Laurence Olivier and Mr. Wilfred Lawson. (I. Br.)

United States.—The three major points of interest concerning the American theatre in 1937 were: the renewed evidence of financial prosperity after six years of box-office lassitude, the sudden rebirth of the theatre in the cities outside of New York, and the large remigration from Hollywood of playwrights and actors. The more noteworthy particularized events were the award of the New York Drama Critics' Circle's prize for the best native new play to Maxwell Anderson's blank verse fantasy, *High Tor*, with Paul Green's war fantasy, *Johnny Johnson*, and Robert Turney's classic Greek paraphrase, *Daughters of Atreus*, voted the runners-up; the award of the Pulitzer prize to Moss Hart's and George S. Kaufman's tenderly humorous but dramatically negligible comedy, *You Can't Take It With You*; the Dramatists' Guild's bestowal of the Roi Cooper Megrue prize upon Arthur Kober's amiable, if minor, comedy, *Having Wonderful Time*; the outstanding critical and popular success of the English actor, Maurice Evans's, *Richard II*; the hubbub caused by George S. Kaufman's, Moss Hart's, and Lorenz Hart's lampooning by name, in *I'd Rather Be Right*, of the officials of the current national government; and the Federal Theatre Project's production of *Dr. Faustus* and the series of news sketches dramatized by Arthur Argent under the title of *Power*.

Chief among the year's more unusual theatrical items were the production of four plays by Maxwell Anderson; the simultaneous presentation by eighteen different units of the Federal Theatre Project of the dramatization of Sinclair Lewis's novel, *It Can't Happen Here*; the long-delayed emergence of the spectacular and costly Max Reinhardt-Norman Bel Geddes white elephant, *The Eternal Road*; the increased failure of the once estimable Theatre Guild to live up to its earlier established standards; the enormously augmented audiences on what is known as the road and the great success of the better productions, all clearly indicating the transference to the stage of the considerable antecedent affection for the motion picture; and the numerous productions of the plays of Shakespeare, most of them ill-considered and self-defeated. Apart from the Evans presentation already referred to, only the *Julius Cæsar* of the newly founded Mercury theatre had points critically endorsable, and even several of these were open to debate. The *Hamlet* of John Gielgud, ecstatically assimilated by feminine audiences and the more emotional critics, left everything to be desired by sober students of the tragedy, as did the *Hamlet* of Leslie Howard which followed it. The *Othello* of Walter Huston died of spontaneous inanition; the *Cleopatra* of Tallulah Bankhead was unanimously provided with a critical and public asp; and the *As You Like It* of the Surry Players, like the two former exhibits a quick failure, was swallowed up in its own amateurishness.

The Popular Successes.—The question of quality not figuring the one way or the other, the biggest popular successes of the year were the Hart-Kaufman *You Can't Take It With You* and *I'd Rather Be Right*, Clare Boothe's derisory comedy of the genus female, *The Women*, S. N. Behrman's adaptation of Jean Giraudoux's saucy paraphrase of the Jupiter legend, *Amphitryon 38*, acted by the Lunts, the already noted Evans' *Richard II*, Robert Sherwood's adaptation of Jacques Deval's comedy of Russian nobles in exile, *Tovarich*, Mark Reed's comedy of morals, *Yes, My Darling Daughter*, the Murray-Boretz theatrical farce, *Room Service*, Rachel Crothers's comedy of a flutter-minded woman caught in the fancies of Buchmanism, acted by Gertrude Lawrence and called *Susan and God*, Kober's *Having Wonderful Time*, and the Monks-Finklehoffs comedy of undergraduate life at the Virginia Military Institute, *Brother-Rat*.

Among the year's phenomena were the continuance of the run of *Tobacco Road*, which opened on Dec. 4, 1933, and is within hailing distance of equalling and possibly even exceeding the record run of 2,532 performances established by the memorable *Abie's Irish Rose;* the astonishing success in various cities outside of New York of the ancient melodrama, *The Drunkard*, which, for a single example, on June 30 entered the fifth year of its engagement in Los Angeles; the unprecedented road success of Helen Hayes in *Victoria Regina*, its box-office returns breaking record after record; the demonstrated distaste of the American public for the psychopathic drama favoured by the English public, and the failure of every such imported exhibit; and the concerted effort, at length, of the various managerial and acting organizations to attempt to rid the theatre of some of the barriers that have been standing in the way of its health and greater prosperity. (*See* also FEDERAL THEATRE.) (G. J. N.)

THEOSOPHY. The Theosophical Society in England has a membership of about 3,500 persons, of whom some 560 are unattached, whilst 2,940 belong to local lodges and centres. There are 126 lodges and 34 centres grouped into five federations, lodges and federations being self-governing. A Youth Centre is affiliated to the International Federation of Young Theosophists, and meetings are held at the Annie Besant Memorial Hall, 50 Gloucester Place, Portman Square, London, where are the chief offices for England.

Scotland, Ireland, and Wales each have branches of the Society, with groups, lodges, and centres. Within the Society in 1937 were 47 national societies or sections in different countries in the world, each national society consisting of not fewer than seven lodges. The president of the movement is Dr. George S. Arundale, and its headquarters are at Adyar, Madras, India.

In 1937 an important European convention was held at Copenhagen, and among many international speakers were Dr. Maria Montessori and the Rt. Hon. George Lansbury, M.P. Membership in England in 1937 showed little change from that of the previous year. A legacy of £10,000 was received by the English Society.

THOMSON, ELIHU, American electrical engineer and inventor; born in Manchester, March 29, 1853; died at Swampscott, Mass., March 13, 1937. A biography is to be found in the *Ency. Brit.*, vol. 22, p. 150.

THOMSON, JOHN GORDON, M.B., Ch.B. (Edin.), F.R.C.P.(Lond.), British medical scientist; died Aug. 13, 1937. He was educated at Bathgate Academy and Edinburgh, taking his M.A. in 1903. At Edinburgh he was prosector to Prof. D. J. Cunningham, and later held research fellowships at Liverpool. In 1914 he went to the London School of Tropical Medicine as lecturer in protozoology, but was in Egypt during the War as pathologist and protozoologist at Alexandria. In 1918 he took charge of the Malaria Research Laboratories at the War Office, and in the same year became professor of medical protozoology at the just-opened London School of Hygiene and Tropical Medicine. In 1921–22 he made two visits to Rhodesia to investigate blackwater fever, travelled in the West Indies and Central America in 1924, and was exchange lecturer at the Johns Hopkins University, Baltimore, in 1926. He was by this time known as one of the first authorities on malaria in the world, and as such his services were enlisted time and again by such bodies as the League of Nations Health Organization and the Ministry of Health. He married Hilda Burgess, and had a son and a daughter.

TIBET, country of Central Asia, lying N. and N.E. of the Himalayas, mainly a high tableland: nominally a Chinese dependency, it is in practice independent, under the rule of the Dalai Lama, an incarnation of a Bodhisattva who, on his death, is reborn in a new body which is in due course recognized as that of the new Dalai Lama. The area of Tibet is about 450,000sq.m.; estimates of the population vary between 750,000 and 6 millions; 2 millions is probably somewhere near the truth. The capital is Lhasa (population perhaps 50,000). The national religion is Lamaism, a development of Mahayana Buddhism, which has been greatly influenced by relics of the pre-Buddhistic spirit-cult of the Tibetans, and by Tantric infiltrations from India. Education is carried on by the many monasteries.

The last Dalai Lama died in 1933, and government has since been in the hands of the Anchin Lama, third in rank in the ecclesiastical hierarchy. On several occasions—last in mid-1937—claims that a new Dalai Lama had been discovered have been made; but so far final recognition does

F. Spencer Chapman]

THE REGENT OF TIBET IN THE RECEPTION ROOM OF HIS PALACE ON THE OUTSKIRTS OF LHASA not appear to have been accorded to any of those put forward. After the Dalai Lama's death, an invitation was extended to the Tashi Lama, second in importance of the priest-rulers of Lamaism, to return to the country from China, where, following his flight to Mongolia in 1924, he had been welcomed by the Chinese, who hoped with his aid to re-establish their former influence in Tibet. As, however, he was accompanied by a detachment of Chinese troops he was induced to halt in eastern Tibet outside the area ruled from Lhasa, where, in June 1937, the Anchin Lama met him at Hsinking. In November the Tashi Lama was forbidden to enter Tibet proper until he had performed ' ten virtuous deeds ', and on Nov. 30 he died, still in exile, in western China.

Agriculture is not of first importance in Tibet, but some fruit and cereals are grown ; sheep and yaks are pastured, and the country has become recently the scene of a new interest—the search for the giant panda, a delicate creature indigenous only in this country. Gold and salt are found and worked ; manufactures are restricted to articles for local consumption. There are no railways or regular air communications, and roads are primitive. Trade is almost entirely with India and China. There is a Tibetan paper currency, but Indian and Chinese coins are also in use. There are no regular military forces.

TIMBER. Three features of the timber trade in 1937 were : (1) the continued efforts in Europe to align production to market needs, to aid market stabilization ; (2) the sharply upward curve of prices early in the year, followed by severe reaction ; (3) the marked progress of organized activities in many countries of the world to promote wider and more effective utilization of wood.

Stabilization efforts began two or three years ago with the establishment of the European Timber Exporters' Convention. The Convention fixed sawn softwood exports for 1937 at 4 million standards (one standard equals 165cu.ft.).

Early in the year, speculative elements entered into the trade, extremely heavy buying by some of the chief importing countries took place, prices advanced rapidly and greatly, and freight rates increased also. Levels were eventually reached beyond which importers would not go, and the resultant lull in business with shippers lasted for months.

In September (1937) the Convention decided to effect a 10 per cent. reduction in the quota for 1938, giving a figure of 3,600,000 standards. In December, however, unsold balances of 1937 were still so substantial that in export and import circles alike it was felt that at the Convention in Warsaw in Jan. 1938 a further reduction in the 1938 quota might be made. A decrease of 180,000stds. was agreed upon, making a total decrease in the quotas of 580,000stds. as compared with 1937.

The European Beechwood Convention was formed in Vienna in November, and has fixed beech quotas for export in 1938 at 427,500 cubic metres.

Some normal outlets for exports in 1937 were upset by the troubles in Spain, hostilities in the Far East (affecting particularly British Columbia's trade with the Orient), and efforts of certain European countries striving for national self-sufficiency in the matter of raw materials. The United Kingdom timber imports in 1937 totalled £61,823,873 compared with £43,516,879 in 1936.

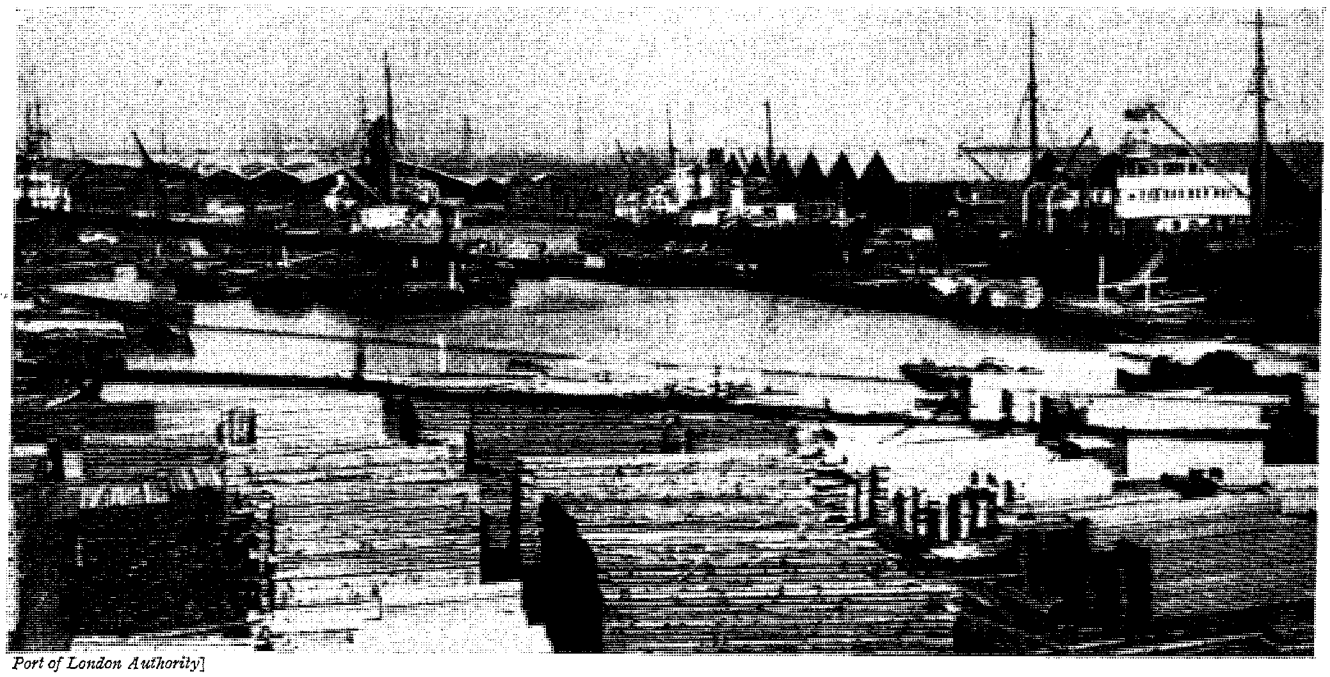
Timber development work has made great headway. In Great Britain progress is recorded in popularizing timber houses. The World Exposition in France afforded opportunity for demonstrating all-timber buildings, together with great arch-spans and bridges built up with laminations of wood. Australia now has its Timber Development Association, and fine new £30,000 timber research headquarters, recently opened. The Timber Utilization Department of the Research Institute at Dehra Dun, India, has done outstanding propaganda work too, and the timber development idea has extended in many countries during the year.

Finally, the Third International Conference on Timber Utilization in Paris, July 1937, provided evidence of great progress with the newer utilizations of wood and wood derivatives—wood gas, wallboards, cellulose, wood alcohol, feeding-stuffs, and artificial wool. Germany (*q.v.*) now has what is claimed to be the greatest factory for the production of ' wool ' from wood.

North America.—In Canada, notwithstanding difficulties that beset the timber or lumber trade, 1937 was a year of progress in certain directions. Two factors that had a disturbing influence on export business were, however, the hostilities in the Far East, as mentioned above, which closed important export avenues for British Columbia lumber, and high freights. In June 1937, the freight factor in the prevailing c.i.f. quotations for B.C. lumber—Douglas fir, Western red cedar, hemlock, etc.—was out of proportion to the cost of the product. Increased freights, it was reported, were responsible for an increase of as much as £4 10*s.* per standard in the price of the lumber to the United Kingdom—a serious matter when it is remembered that B.C. wood in the United Kingdom has to compete with the nearer Scandinavian and Baltic supplies. Domestic trade at times—namely, demand for B.C. timbers from the prairies and eastern Canada for building and other purposes —also fell below expectations. According to preliminary figures, exports of B.C. lumber to all destinations in 1937 totalled 1,141 million ft., compared with something over 1,200 million ft. in the previous year. Exports from B.C. to the United Kingdom were 648,363,276ft., against 666,272,315ft. in 1936.

Eastern Canadian birch shipments to the United Kingdom were well maintained. For the nine months, April–Dec. 1937, there was a total export of birch of over 62 million ft., which exceeded the total for the fiscal year ending March 1937. Export of spruce to the United Kingdom for the fiscal year ending March 1937 totalled 258,851,000ft., but for the nine months from April to Dec. 1937, there was a total export of over 286 million ft., practically all of which was shipped from the provinces of Quebec, New Brunswick, and Nova Scotia. In the same period white pine exports exceeded 45 million ft., a greater quantity than has been exported in any year since 1925.

Great success has attended the trade promotion activities of the Canadian lumber industry. The British Columbia trade, which has had its timber commissioner in the United Kingdom for several years, has lately extended this form of missionary service by establishing timber commissioners in South Africa, and in the British West Indies, and first-class trade promotional work has been done in Australia also during 1937. It is worth noting, in this connexion, that in September last the biggest lumber cargo ever loaded at a British Columbia port left Vancouver in the motor ship *Amsterdam*, destined for Australia. She carried close upon 7,600,000ft. of lumber and logs. In addition to the B.C. timber commissioners serving overseas, there is an Eastern Canadian timber commissioner in London, England, whose work has done much to extend



Port of London Authority]

TIMBER-LADEN VESSELS IN THE SURREY COMMERCIAL DOCKS, LONDON

and popularize the use of Canadian spruce, birch, and maple in this important buying market.

The Canadian lumber trade with the United Kingdom has, of course, greatly benefited from the empire preferences granted under the Ottawa agreements, and by the fact that in contracts by government departments and public authorities the use of empire timbers is often specified. The Ottawa agreements were signed in 1932. The figures below relating to the British Columbia timber export trade illustrate the trends in recent years:

Total in Thousands of Feet

Year	United Kingdom	Rest of Empire	United States	Other Countries
1932 .	108,000	143,000	88,000	116,000
1933 .	271,000	158,000	31,000	203,000
1934 .	456,000	178,000	12,000	196,000
1935 .	456,000	180,000	96,000	155,000
1936 .	666,000	223,000	188,000	154,000

Possible developments in timber house construction in Britain may open the way to still further utilization of Canadian timbers; while the end of the hostilities in the Far East would be followed by a heavy demand for reconstruction material in China. (N. F.)

In the United States, timber (or lumber) production for 1937 was estimated at about 26,000 million board ft., a gain of 7 per cent. over 1936, but below the normal production of 38,000 millions and far from the peak production of 46,000 millions in 1909. Production comes principally from the north-west and south, the former producing about 6,500 million board ft. of Douglas fir and the south about 7,000 million board ft. of yellow pine. Unfavourable weather, the maritime strike, and other labour troubles on the west coast, and later the Japanese war all seriously affected timber production and exports. Prices reached a new 12-year peak in the spring of 1937, but declined sharply in the fall. Lumber exports increased about 10 per cent. over 1936.

Production in 1937 was characterized by the devising of new outlets to save or use waste material, accumulated in large quantities at the sawmills (sawdust, slabs, and edgings have formerly been burned or disposed of at considerable expense); expansion in making briquettes from timber waste, particularly pine shavings in the north-west; the use of insulating material made from redwood bark, of which there is an enormous accumulation; the further refinement at sawmills of semi-manufactured products, and the increased use of the small sawmill producing not over 10,000 board ft. per day.

Timber continues to be shipped in large volume through the Panama Canal, from the centre of production, the north-west, to the centres of consumption—the north-east and middle Atlantic States. The Swedish gang saw was introduced as a factor in timber production, and tended to produce accurate and well-sawn timber, especially common boards and two-inch dimension, at lower cost. The portable band mill continued to replace the circular sawmill, the latter being very wasteful because much wood is converted into sawdust, whereas the narrow kerf of band saws results in less loss. Wood is continuing to improve its standing as an engineering material. Improved grading processes and better manufacturing processes tend to give timber a higher standing as a structural building material. The use of metal connectors to improve the strength of timber joints in heavy construction has made definite headway, while the increased use of structural plywood in home construction has made notable progress.

In April 1937, 140 leaders in public and industrial fields met in Washington upon invitation of the National Lumber Manufacturers' Association in an attempt to formulate a programme whereby the nation's forest heritage could be better conserved and at the same time made continuously productive.

TIMOR ARCHIPELAGO. This archipelago consists of Timor, largest of the Lesser Sunda islands, and neighbouring islands, roughly midway between Celebes (to the north) and Australia (to the south). Western Timor (5,400sq.m. or, with the neighbouring islands 24,500sq.m.) is a Dutch possession; Eastern Timor (7,300sq.m.), Portuguese. The population of Dutch Timor (1930) is 1,657,000; of Portuguese Timor, *c.* 475,000. Coffee, copra, and sandalwood are produced and exported. The islands in recent years have become increasingly important by virtue of their position on the Europe-Australia air route.

TITHE REDEMPTION COMMISSION. Queen Anne's Bounty, as owners of all tithe rentcharges held on behalf of benefices and ecclesiastical corporations, have been closely engaged throughout the year in satisfying the Tithe Redemption of their right to the hundreds of thousands of separate units previously held in Church ownership.

This is a necessary step preparatory to establishing the amount of stock to be issued to the Bounty under the Tithe Act, 1936, in compensation for the extinguished tithe rentcharge.

Successors to tithe-owning benefices will ultimately suffer a loss calculated at nearly 25 per cent. Incumbents will, however, henceforward receive the income regularly, a system of quarterly payments to the clergy having been instituted.

The problem of 'White Elephant' parsonage houses is being assiduously dealt with; and, during the year, 84 such houses have been sold.

TOBACCO. Consumption of tobacco throughout the world continued to increase during 1937, despite wars which closed half the tobacco factories in China and stopped the customary exports of American tobacco to Spain. The world's leading importer of tobacco, the United Kingdom, retained for home consumption a record supply of tobacco imports, 183,400,000lb., compared with 175,000,000lb. in 1936, the previous highest. The world's leading exporter of tobacco, the United States, produced 1,505,762,000lb., which is 30 per cent. more than the 1936 crop of 1,154,131,000lb. (as estimated by the United States department of agriculture). Ontario, the principal tobacco-growing province of Canada, planted the largest crop in its history, 57,100ac., a 24 per cent. increase over the 1936 acreage. Production in Canada in 1937 was 71,352,000lb., compared with 46,084,000lb. in 1936, as estimated by the ministry of trade and commerce. Production of tobacco in other countries in 1937 and 1936 was given by the International Institute of Agriculture as follows, the figures in parentheses being for 1936:

Japan, 142,750,000lb. (142,353,000); Greece, 140,624,000 lb. (178,506,000); Turkey, 138,892,000lb. (99,208,000); Italy, 94,799,000lb. (96,783,000); Bulgaria, 69,055,000lb. (93,098,000); Hungary, 45,751,000lb. (50,377,000); Southern Rhodesia, 18,560,000lb. (18,200,000); French Equatorial Africa, 4,400,000lb. (3,000,000). Estimates of the Chinese crop are around 220 million pounds. No figures for Russia are available. The U.S.S.R. crop in 1936 was estimated at 608,478,000lb., compared with a five-year (1931–35) average of 354,728,000lb.

The 1937 production was marked by a heavy increase in acreage planted to flue-cured tobacco, the type popular for cigarettes, reflecting the continuing larger use of cigarettes both in Europe and America. In the United States the consumption of cigarettes has increased by about 10 per cent. each year since 1932, and that of cigars about 6 per cent. each year since 1933, according to the United States Department of Agriculture estimates. The flue-cured tobacco crop in the United States was the second largest on record, 850,230,000lb., or 25 per cent. larger than the 1936 crop of 682,850,000lb. The record crop of this type of tobacco was 865,171,000lb. in 1930. In Canada, the increased acreage in flue-cured tobacco was about 37 per cent., while 23 per cent. less of Burley was planted and the dark tobacco acreage was also reduced. In Japan, China, Manchukuo, and Korea, governments are encouraging the growing of flue-cured tobaccos over other types.

Much of the increase of tobacco in the tobacco-growing countries of the British Empire is attributable to the imperial preference tariff on tobacco imported into the United Kingdom. Since 1919, when 60 years of non-preferential rates and free trade were suspended, imports from Empire tobacco countries to the United Kingdom have increased progressively almost every year, and the acreage in Canada, Southern Rhodesia, India, and Nyasaland has likewise increased. The United Kingdom's import duty on leaf tobacco from the United States and other foreign countries is 9*s.* 6*d.* to 10*s.* 6*d.* a pound. The duty on Empire leaf is 2*s.* 1½*d.* a pound less. Of the tobacco supply the United Kingdom annually retains for home consumption, only 1·01 per cent. was imported from Empire countries in 1919. In 1937, when the amount of tobacco retained in the United Kingdom was the record supply of 183,400,000lb., 23·6 per cent., or 43,280,000lb., was imported from countries of the Empire.

Tobacco exports from Cuba for the period of Jan. 1 to Sept. 30 in 1937 and in 1936 are given by the Cuban government as follows, figures in parentheses being for 1936: Leaf tobacco, 9,305,264kg. (7,906,306); cigars, 27,393,102 in number (33,482,252); cigarettes, 17,164,211 (17,678,494); pipe tobacco, 14,609,000kg. (34,800,000). (*See* also CIGARS AND CIGARETTES.)

TOGOLAND. This former German colony, on the Gulf of Guinea, West Africa, bounded E. by Dahomey and W. by the Gold Coast, is mandated partly to Great Britain and partly to France.

The British Mandate marches with the Gold Coast (*q.v.*), with which it is administered. Area, 13,040sq.m.; population (1931), 293,670. Statistical returns are included in those of the Gold Coast.

The French Mandate (Togo) is the eastern and larger portion, as well as the more valuable. Area, 20,070sq.m.; population, 751,000; capital, Lome (13,340). Imports and exports for 1936 were valued at frs.31,200,000 and frs.34,700,000 respectively. The chief products are cocoa, palm kernels and oil, cotton, and copra. There are 332km. (206m.) of railway and 3,500km. (2,175m.) of roads.

TOKYO, capital of Japan, population (1936) 6,085,800; area 257sq.m., situated in 35° 41′ N. and 139° 45′ E. at the head of the bay of the same name on the south-east coast of Honshu, the main island of Japan.

Tokyo took its place among the most populous capitals of the world when it was greatly enlarged by the amalgamation of a large suburban area with the city in Oct. 1932. Twenty new wards were added to the original 15. Tokyo is served by an extensive system of tramcars, buses, and city railways. A tube is under construction, and the part which has already been completed serves a section of the central districts of the city. It is a self-governing municipality, governed by an elected common council and board of aldermen. A good deal of executive authority is vested in the mayor, who is elected by the common council. As the capital of the empire, Tokyo is the place of residence of a large number of government officials and civil servants. It is also Japan's largest educational centre, the Kanda Ward being largely a students' quarter. As at March 1, 1935, Tokyo had 22 universities, with 46,625 students, and 72 professional schools, with 52,165 students. Tokyo and its environs rank as one of Japan's four great industrial regions, the others being Osaka, Nagoya, and North Kyushu. On

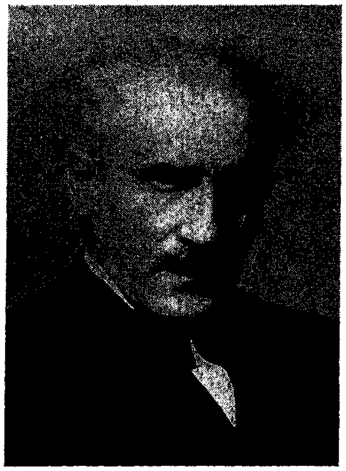
Oct. 10, 1936, there were 975 factories employing more than 15 operatives. The number of workers in these factories was 170,830. Features of Tokyo are the many hills on which the city is built and the absence of a regular numbering system for the houses. The city has been selected as the venue for the Olympic Games in 1940. (W. H. Ch.)

TONKS, HENRY, F.R.C.S., British artist; born at Solihull, Warwickshire, 1862; died at Chelsea, Jan. 8, 1937. Trained in medicine, he abandoned this for an artistic career, and eventually became assistant professor at the Slade School. From 1917 to 1930 he was Slade Professor of Fine Art in the University of London. Tonks exhibited regularly with the New English Art Club, and his work is to be seen at the Tate Gallery, and at Manchester, Melbourne, Capetown, and the Luxembourg. He was unmarried.

TORONTO, with a population of 648,309 (1937) and an area of 34sq.m., is the second largest city of Canada and capital of the province of Ontario. Its 2,627 manufacturing establishments produce annually goods to the value of $360 millions. Conveniently situated on the line dividing the population of Canada as between east and west, Toronto has become an important centre of distribution of goods to the province of Ontario, the most populous of the Canadian provinces, and to the rest of the Dominion. In bank clearings, customs revenue, and postal revenue, it leads all other cities in the Dominion. There are 10 collegiate institutes, 4 technical schools, 4 high schools of commerce, and 160 public schools, besides 39 separate schools and a large number of private educational establishments. The University of Toronto, with 7,263 students, is said to be the largest university in the British Empire.

The Corporation of the city of Toronto owns the street railway and motor-bus transportation, the waterworks system, and the local hydro-electric system, which has exclusive distribution of electricity for light, heat, and power. There are 106 parks and playgrounds, with a total area of 2,243 acres. Toronto's imposing harbour is in the hands of a public commission. The Canadian National Exhibition, now in its 60th year, is a great annual fair attracting 1,500,000 visitors. The well-known Royal Winter Fair with its agricultural, live-stock, and horse show is also held annually. (G. R. G.)

TOSCANINI, ARTURO (1867–), Italian orchestral conductor, was born on March 25, 1867, at Parma, where he gained a diploma as a violoncellist. It was while he was in Rio de Janeiro as a 'cellist in a production of *Aïda* in 1886 that he was suddenly called upon to take the place of the conductor, and subsequently he quickly attained international fame in that capacity. He conducted opera in various Italian theatres, his connexion with La Scala at Milan lasting almost uninterruptedly from 1899 to 1911, when he went to the Metropolitan Opera House, in New York. On the outbreak of the World War he returned to Italy, where he placed his art unreservedly at the service of his country. From 1921 to 1929 he was again at La Scala. Turning almost exclusively to concert work, he conducted the New York Philharmonic Society's orchestra from 1929 to 1936, as well as, at intervals, many famous European orchestras.



Wide World Photos]

TOSCANINI

The exceptional virtue of Toscanini as a conductor lies in his ability to recreate the original inspiration of composers of all periods and all nationalities. Others may be supreme as interpreters of particular composers; but Toscanini, conducting from memory after months of intensive study of his subject, has no such limitations.

TOTALITARIAN STATE, the name given in recent times to those States having a highly centralized form of government under the control either of a personal dictator who, or of a political group which, refuses recognition of other political parties and denies them any representation or voice in the government.

The leading examples are Fascist Italy and Nazi Germany (*qq.v.*), though many other countries—including the Free State of Danzig, Poland, Rumania, Estonia, Greece, insurgent Spain, Japan (and, in fact if not in name, the U.S.S.R.) in the Old World, and Brazil, Uruguay, and Peru in the New—have either succumbed to or are imbued with the doctrine of 'totalitarianism'. This is in part derived from Hegel's conception of the nation-state, from the theory of the State as the supreme expression of all forms of national life to which none of its activities is extraneous; and it may be summed up in Mussolini's formula, 'All within the State, nothing outside the State, nothing against the State'. General Franco told much the same story in the programme that he took over from the Falangists in April 1937, when he proclaimed that the State he was hoping to form in Spain would be a 'totalitarian instrument in the service of national integrity'. The system of political parties with all that flows from them, representation by conflicting parties, and parliament of the well-known type, would, he said, be implacably abolished, and a rigorous discipline would prevent any attempt 'to poison or disunite' Spaniards.

The fallacy underlying the theory of totalitarianism would seem to reside in the fact that a State could be conducted in conformity with its principles only in a world of its own: if 'all' is to be 'within the State' and 'nothing outside the State', the very existence—much less the rights—of other States can receive no recognition. (L. H. D.)

TOURING AND TOURIST CAMPS. The introduction of the modern house trailer has given a decided impetus in the United States to the increase and improvements of camp sites for tourists wherever scenic attractions call. Florida, California, Denver and other parts of Colorado, Niagara Falls, the White mountains of New Hampshire, the Shenandoah valley in Virginia, and nearly all the national parks of the West have desirable camp sites for trailers.

Those who wish to travel light and do not care for the more formal hotels can find desirable temporary quarters in the many cabin camp sites. The cabin is a temporary home. Usually there are eating places near by, or anyone who wishes may cook his own meals in the cabin. Most States now require that all trailer and cabin camp sites shall have proper sanitation, pure water supply, and proper drainage. Bed linen must be changed for each new occupant. In fact, State laws for the protection of the travelling public are now as stringent as to proper regulation of cabin and trailer sites as they are regarding hotels and inns.

Almost all the national parks provide excellent accommodations, where sanitary conditions are excellent.

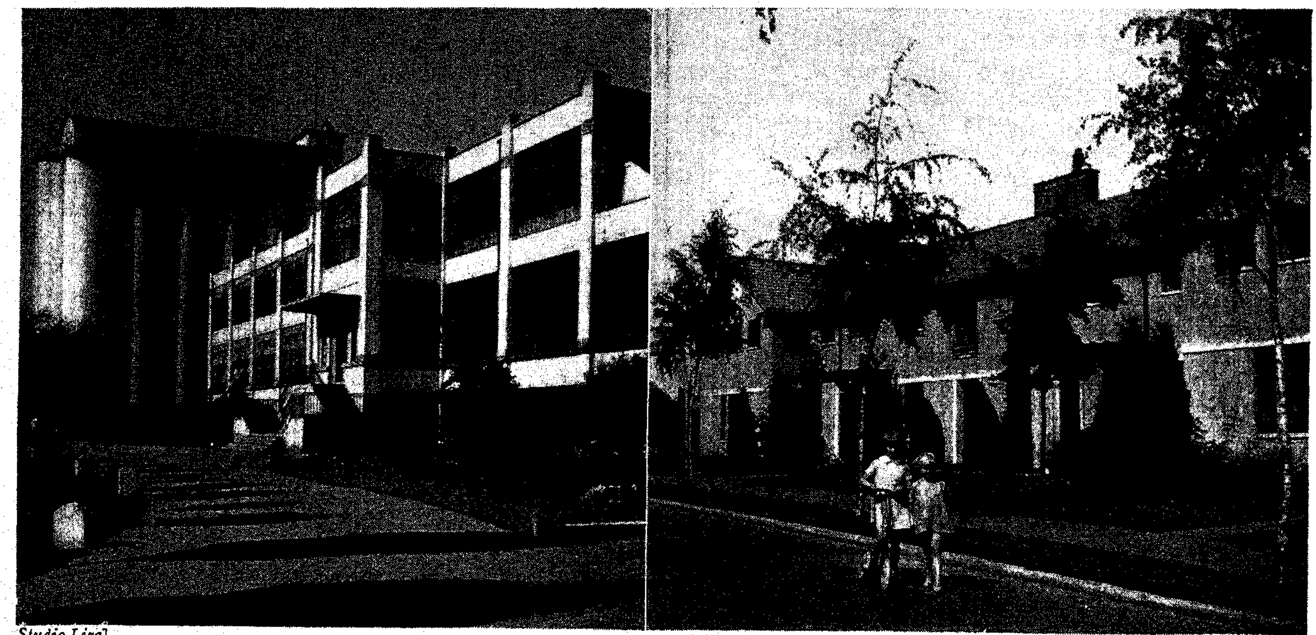
There is still, however, a growing need for more and better camp sites, and those who operate well-regulated camp sites get a good year-round business. The increasing demand by trailer tourists for more facilities has led to improvements, so that a good modern camp site often furnishes electricity, water supply, garbage disposal, laundries, wash rooms, and toilet arrangements, all as part of the regular equipment, use of which is included in the modest fee for parking the trailer. Fifty cents per night or $3.50 per week is the usual charge. Cabin camps, with all facilities, can be had for $1 per night per person. (*See* also CAMPING, CANOEING, AND CARAVANNING.)

TOWN AND COUNTRY PLANNING. Interest in town and country planning, namely, the wise use of the land and material resources of a country in relation to their human uses and the human environment, was greatly quickened in 1937. Almost everywhere there were signs of an advance from minute planning of tiny areas to a need for co-ordinated planning of whole regions and finally of national, as a penultimate step towards international, planning. At the same time, there was much confusion of thought, and, not infrequently, particularly in the authoritarian States, sectional interests were wrongly identified with planning efforts merely because unco-ordinated effort was established on a nation-wide instead of on a more restricted and localized basis. A roads scheme or a transport system, even although organized on a national basis, might, if unrelated to the general economic and sociological needs of the whole community, represent the antithesis of planning.

In England, under the various town-planning Acts, schemes of 24 million acres are at various stages, while schemes covering 237,500 acres have reached the final stage. It is important to notice, however, that in England, whenever a local authority passes a town-planning ‘ resolution ’, some measure of control over the land under its jurisdiction is obtained. The ministry of health, the supreme planning authority, too, has shown an awakened interest in rural planning, and in 1937 discussed the possibility of the complete reservation of a ‘ rural stretch ’, *i.e.* the total and permanent prohibition of building development in truly rural areas of special beauty. Chiefly notable, however, is the development of a sound administrative town-planning machine and a fine personnel, while there are signs that at last public indifference is to be replaced by public sympathy and alert interest.

Elsewhere in Europe, 1937 saw interesting developments. Bulgaria eagerly awaits the confirmation of Professor Müsmann’s plan for Sofia as the signal to commence a great town-planning drive for the whole of the country. Czechoslovakia is alarmed by the constantly growing disparity between urban and rural life, by the constant growth of city centres as against the depopulation of the country. Germany has entrusted the Reichsstelle für Raumordnung (National Planning Board) with the comprehensive co-ordinated zoning plan for the whole Reich. In France, where power to make plans was extended by decree in 1935 to all regions and all communes, one of the regions which has availed itself of the opportunity embraces two departments, the Nord and the Pas de Calais, comprising the coal-mining area from Lille, Arras, and Bethune to the Belgian frontier. In Norway, a plan for the colonization of new agricultural areas and the establishment of new industries has been discussed, but is due for further consideration at the Building Congress (Nordisk bygningsdag) in Oslo in 1938. In Poland, work preparatory to regional planning began 10 years ago, and since then the elaboration of a scheme for the town-planning of Warsaw has progressed, while centres for the preparation of regional schemes (by a committee under the minister of the interior) have been established for 12 areas.

Meantime, national and international interest in planning has been directed to the broader social issues raised first of all by English pioneers such as Sir Patrick Geddes and Sir Ebenezer Howard, as well as to special aspects of the subject, such as the distribution of population and industry. This problem is engaging the attention of a Royal Commission set up in Great Britain, which, before the end of 1937, had received a considerable body of evidence, some of it tending to the view that the decentralization



Studio Liza]

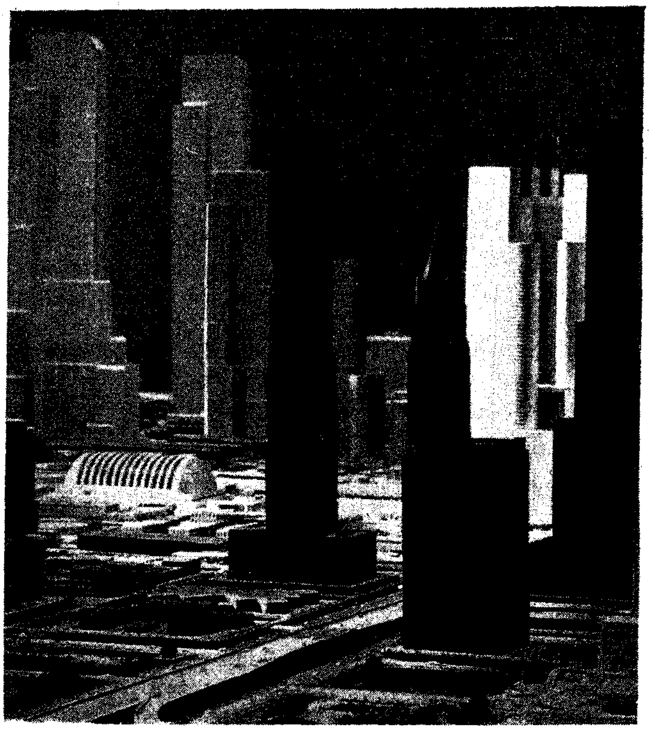
MODERN TOWN PLANNING—A FACTORY AND HOUSES AT WELWYN, HERTFORDSHIRE of large towns into satellite communities of the garden city type is the only real solution to many urgent problems common to all nations. As a necessary corollary to that, some measure of State guidance of the location of industry would, it is widely held, be imperative. Many English experts, indeed, hold the view that the location of industry is the key to the whole planning problem. The report of the Commission, which includes distinguished town-planners, such as Professor Patrick Abercrombie and Sir William E. Whyte, is awaited with interest, not only in England, but throughout the world. (G. McA.)

United States.—In the year 1937, there is noted a definite shift in planning emphasis. It may be described as a growing emphasis on the dynamic rather than the static factor of urban life ; upon provision for movement rather than placement. This change need cause no concern to those who are interested primarily in aesthetics, for beauty and efficiency in city planning are by no means incompatible.

The year 1937 also showed a definite change in the approach of those planners who are interested primarily in mobility. Until recent years it had been thought that the problems of traffic congestion and traffic accidents could be solved by a widening and rearrangement of existing streets. It is now generally recognized that this was a false hope, and that new routes especially designed for and adjusted to the requirements of motor traffic must be constructed. The principles of such construction are already established and are commonly set forth under the title ' limited ways '. A limited way is a route for the exclusive use of motor traffic, provided with a physical separation of opposed streams of traffic, without direct access to abutting property, with a complete separation of all intersections, and with a cross-section design eliminating friction between vehicles moving in the same direction. This type of construction is generally illustrated in the German Autobahn system and in numerous pieces of urban construction in the United States. The most outstanding example is the west side elevated highway and its northerly extension along the Hudson river in New York City. Portions of the Outer Drive in Chicago also illustrate these principles. Both the cities of Chicago and San Francisco have developed plans for comprehensive systems of limited way construction.

Both theoretically and in actual practice, this type of construction proves its ability to carry large volumes of urban traffic at relatively high speeds and in almost perfect safety. It is anticipated that these routes in the future will carry express bus as well as general traffic, and, therefore, will afford an added solution for the urban transportation problem.

The year 1937 has witnessed the completion of a number of very notable traffic improvements in the United States. Among these are the Triborough bridge, the first tube of Lincoln tunnel under the Hudson river, the Henry Hudson and various other parkways, all in New York City ; the outer bridge over the mouth of the Chicago river and certain new portions of the Outer Drive ; and in San Francisco the dedication of both the Golden Gate and the San Francisco-Oakland Bay bridges, each the largest of its kind in the world. (*See* also HOUSING ; ROADS AND HIGHWAYS.) (M. McC.)



Fox Photos]

A MODEL CITY OF THE FUTURE DESIGNED BY DR. MILLER MCCLINTOCK, DIRECTOR OF STREET TRAFFIC RESEARCH AT HARVARD. FOOTPATHS ARE TWENTY FEET ABOVE THE ROAD

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TRADE, BALANCE OF : *see* BALANCE OF TRADE.

TRADES UNION CONGRESS. The British Trades Union Congress, founded in 1868, is a voluntary association of trade unions which meets every year in September, and now represents 214 unions with a membership of 4¼ millions. Its executive work is carried on by an elected general council of 32 members. Its activities during 1937 covered many questions of trade-union organization, attention being concentrated in the main on the distributive trades, youth, the nursing profession, and women's organizations, all of which are numerically backward in trade unionism.

In the realm of health and welfare, much attention was devoted to improving factory legislation, to the schedule of industrial diseases, to improvements in workmen's compensation, health and unemployment insurance, and especially in trying to secure increased benefits and allowances. Holidays with pay were the subject of evidence submitted to a government commission, the Trades Union Congress seeking to establish 12 days' paid holidays after 12 months' employment, and other holidays proportionate to length of service.

In conjunction with the British Medical Association, a scheme was submitted for the rehabilitation of injured workmen, to be operated in association with the hospital fracture clinics. Other matters under review were a national maternity service and a comprehensive public health service.

In the educational sphere, scholarships were granted for young workers to Ruskin College, Oxford ; and many week-end schools and a summer school were held on trade-union subjects. Students were also sent to the Summer School of the International Federation of Trade Unions at Brunnsvik, Sweden, and to the International Labour Office at Geneva. Representations to the education authorities were made to minimize the adverse effects of the exemption clauses of the Education Act, 1936.

Preliminary steps were taken to create a Scientific Advisory Council, on which eminent scientists will work in association with the Trades Union Congress; and an advisory committee of experts was appointed to inquire into the conditions of native labour in the British colonies and dependencies.

Among government and other bodies upon which Trades Union Congress representatives served, were committees and commissions to investigate the cost of living index, the geographical distribution of industrial population, the fair wages clause, and workmen's compensation.

The main subjects discussed at the Norwich Congress of 1937 concerned the pensions scheme, promoted in association with the Labour Party to increase pensions to £1 a week at 65 and 35*s.* for married couples; the establishment of the 40-hour week; holidays with pay; action against the spread of fascism; the conflict in Spain; Japanese aggression in China; and national defence policy, where the view was expressed that Great Britain needed to be equipped to meet the danger of war and to play its full part in developing collective security and resisting intimidation from any aggressive Power.

(W. M. Ci.)

TRADE TREATIES. A large number of trade pacts were made in 1937. The Reciprocal Trade Agreements programme of the United States showed continued evidence of progress, and the expiry of the minimum period of the Ottawa agreements caused considerable activity in this field in the British Commonwealth; the Oslo group entered into a new understanding; and there were many other trade agreements in Europe and elsewhere.

The United Kingdom-Canada agreement of February stabilized, on the British side, the duty-free entry of many Canadian goods and other privileges maintained under the Ottawa agreement, which it replaced. The United Kingdom lowered the duty on silk stockings and reed organs, and promised not to increase the duty on Canadian motor-cars. Canada lowered the preferential duties on 150 tariff items or sub-items, and conventionalized duty-free entry of other important classes. On a number of articles she guaranteed maximum preferential rates of duty in place of former minimum margins of preference. In September, Canada signed pacts with Australia and New Zealand amending earlier trade agreements; Canadian duties on mutton and lamb and other important products were reduced (*see* TARIFFS). Canada also made fresh arrangements, on most-favoured-nation lines, with Brazil, Uruguay, El Salvador, and France. Under the Exchange of Notes with France (July), the latter extended her minimum tariff to additional Canadian products and enlarged the quota for Canadian cheese. while Canada renounced certain other quota rights. Negotiations for the amendment of the United Kingdom's Ottawa agreements with India and New Zealand failed of success in 1937, the old arrangements being further prolonged. Australia and South Africa deferred such negotiations until the position between Great Britain and the United States should be clarified. Australia's new most-favoured-nation pacts with Belgium, Czechoslovakia, and France went into force in Jan. 1937. South Africa established most-favoured-nation relations with Czechoslovakia (January) and with Belgium (July). Under a trade agreement with Germany (September), New Zealand reduced intermediate duties on important German products, and abolished primage duty on others; an accompanying payments agreement pledged Germany to employ in purchasing New Zealand goods the whole of the exchange derived from her exports to New Zealand. India renewed and readjusted (April) her convention with Japan, varying her maximum import of Japanese cotton piece-goods in accordance with Japan's purchases of Indian raw cotton. The political separation of Burma necessitated a separate Burmo-Japanese convention (June). The German-Irish Free State treaty, renewed with effect from Jan. 1937, fixed a ratio of three-to-two between Irish import and export trade with Germany. The Free State and the United Kingdom extended their so-called coal-cattle pact in January, the latter removing the special duties on Irish horses, the former those on sugar and subsidiary products. The United Kingdom signed a most-favoured-nation agreement with Cuba (February), and by an Exchange of Notes (November) kept alive a denounced treaty of commerce with Siam.

A new arrangement among the Oslo Powers (Belgium-Luxemburg, Denmark, Finland, Netherlands, Norway, Sweden) was signed at The Hague on May 28. Belgium-Luxemburg and the Netherlands undertook to admit without restriction the import of a long list of goods from the other signatories, and not to take any initiative tending to increase duties on such goods or to impose new ones. The Scandinavian countries and the Netherlands East Indies similarly pledged themselves not to increase or impose duties on other lists of goods, nor to subject to quantitative restriction imports from the signatory countries of any listed goods then entering duty free. The scope of these articles would be extended by bilateral agreements among the signatories, who undertook to inform each other beforehand of any contemplated restrictions, exchange control, or special import taxes. The pact, to which any outside State might accede on terms to be agreed, would hold good until July 1938, though there was an 'escape clause'. A protocol affirmed that this was to be regarded as a first step towards a general lowering of tariff barriers.

Among other European trade agreements made in 1937, those of France may be specially mentioned. The Franco-Canadian pact has been recorded above. Franco-German commercial and payments agreements were signed in July. France granted most-favoured-nation and minimum-tariff treatment to specified German goods, comprising most tariff items, and also consolidated the duties on a long list of articles. Germany, in return, reduced or consolidated duties on an important list of French goods. Should any of these concessions be withdrawn, with due notice, by either party, the other could request the opening of negotiations between special government committees created to settle questions arising out of the agreement. Under the payments pact, all clearing arrangements were set aside. The exchange resulting from German exports to France would be made available (after certain deductions, including a proportion of free exchange for the use of the Reichsbank) for buying French goods. Private compensation transactions were forbidden. In May, a Franco-Polish trade treaty was concluded, to replace an agreement of 1936. Most-favoured-nation and minimum-tariff concessions were exchanged. France reduced duties on Polish sheep and mutton, Poland her duties on wines, fancy leather, hosiery, etc.; Poland also promised safeguards for the local names of French wines—a common feature of French commercial pacts. During 1937, France also signed agreements, on most-favoured-nation lines, with Switzerland (April), Haiti (April), Ecuador (August), Latvia (October), Estonia (November). Her treaties with Honduras and Siam, on the other hand, were denounced.

Apart from Germany's agreements with New Zealand, the Irish Free State, and France, she also concluded new pacts with Chile (February), promising larger imports of Chilean nitrates; with Poland (February), obtaining lower Polish duties on certain machinery and tools, toys, etc.; and with Guatemala (July). An important proviso in the last-mentioned pact was that Germany's most-favoured-nation undertaking excluded privileges granted by her to any European country, while Guatemala's excluded any privileges granted to any Central American republic.

Other exceptions to most-favoured-nation clauses may be noted. France excluded the French colonial empire. The United States excluded Cuba. British Commonwealth countries excluded imperial preference. Sweden (pact with Uruguay) excluded concessions to Norway or Denmark, and Uruguay concessions to Argentina, Bolivia, Brazil, or Paraguay. Estonia and Latvia (pacts with France, *see* above) excluded privileges granted to other Baltic States or to the U.S.S.R., and preferences made under recommendations of the Stresa Conference. Poland (pacts with France, Germany, and Iraq) excluded concessions to the Baltic States customs unions, and the special régime in German and Polish Upper Silesia. In the Franco-Swiss pact, exceptions included frontier traffic, existing customs unions, and multilateral conventions made under the auspices of the League of Nations. The Palestine-Iraq agreement (February) provided for a special reduction of duties on goods passing by the Bagdad-Haifa overland route. Ecuador (pacts with France, the Netherlands, Belgium) allowed the maximum reduction of 30 per cent. on her general tariff only on condition that the balance of trade remained in her favour. New trade pacts signed in 1937, not already noted, included Czechoslovakia-Finland, Poland-Czechoslovakia Poland-Estonia, Switzerland-Yugoslavia. (H. V. H.)

TRADE UNIONS. Membership of all British trade unions increased during 1937 to 5,307,689 (801,775 women), of which over 75 per cent. were affiliated to the Trades Union Congress. All industries, excepting certain textile organizations, shared in this rise of membership, which continued during 1937. Substantial increases were shown by unions in the metal, machine-making, and vehicle-building trades, transport (including railways) and general labour, coal-mining, national and local government, building, and distribution.

Growth in membership during 1937 was the common experience of almost all the other national trade-union movements affiliated to the International Federation of Trade Unions, including the American Federation of Labor which became affiliated during the year. New affiliations and expansion of the movement in most countries raised the total membership to 20 millions, and thus largely offset the loss of membership sustained by the International Federation of Trade Unions in earlier years through the destruction of the unions in Italy, Germany, Austria, and elsewhere. Negotiations were also opened for the affiliation of the Russian trade unions.

Income of Unions.—British unions, at the beginning of 1937, had a total income of £7,628,000, accumulated funds aggregating more than £16 millions. A substantial reduction in expenditure on unemployment benefit was a feature of the year's work; expenditure on trade and friendly benefits, an integral feature of trade-union service, does not vary much from year to year. Excluding unemployment benefit, the unions in 1936 spent £2,623,000 on superannuation, funeral, sickness, accident, and other benefits to members.

Collective Bargaining.—Union negotiations during the year continued the upward trend of wage rates which became evident in 1934, and a total of approximately £750,000 in weekly full-time wages of about 5 million workpeople was added during 1937. A large proportion of these wage increases were obtained by direct negotiation of unions with employers, and others took effect under arrangements made by trade boards, or other joint standing bodies, and under sliding scales based on selling prices. An average reduction of about 2½ hours per week in hours of labour affecting approximately 400,000 workpeople was reported during the year. No large-scale trade dispute was reported, excepting the stoppage of work by engineering apprentices, which led to an agreement with the Engineering Employers' Federation to recognize the engineering unions in negotiating conditions for apprentices and young persons in that industry; and the stoppage of London busmen, which was settled on terms representing important concessions by the London Passenger Transport Board to union claims. Trade disputes, involving approximately 600,000 workers, caused a loss of about 3½ million working days; this was somewhat higher than the respective total of disputes, workers involved, and working days lost in 1936.

The upward movement in wages was counteracted in some measure during the year by the continued rise of retail prices; but real wages, in terms of purchasing power, remained fairly stationary. The Trades Union Congress index of money wages, based upon the level of 1925–29 at 100, showed a rise of about 4 points at the end of 1937; and the Trades Union Congress index of real wages, including the effect of unemployment, taking 1925–29 at 100, stood in the penultimate month of the year at 107·5 as compared with 108 in the corresponding month of 1936. An inquiry was in progress during the year by a government committee appointed to examine present-day expenditure of working-class families, with a view to revising the official cost-of-living index. This had become defective owing to changes in the incidence of household expenditure since the original index, based upon examination of a limited number of family budgets in 1904, was framed. This Committee of Inquiry, on which the trade unions are represented through the Trades Union Congress, organized the collection of some 30,000 family budgets, and the resulting revision of the index should afford a more exact comparison of wage movements with changes in retail prices.

International Labour Standards.—At the 1937 International Labour Conference at Geneva trade-union representation secured the passage of a convention for the 40-hour week in the textile industry. Draft conventions were also discussed in contemplation of reduced hours in the printing and chemical industries, but these failed to obtain the necessary majority of votes. At the 1938 conference there is to be a discussion on the general 40-hour week for all industries. Reduction of working hours to a standard of 40 per week was the objective of trade-union negotiations during the year. In some organized trades progress was made, and it was estimated that in 1937 about 1¾ million workpeople in Great Britain had secured by collective agreement a maximum working week of 44 hours.

By the same means holidays with pay were won during the year in Britain by important agreements, notably in the engineering trades, some sections of the distributive trades, the garment industry, some of the coal-fields, and certain branches of transport. The movements towards both a shorter working week and paid holidays for all workers were strengthened by reforms instituted in other countries. French trade unions, whose membership rose to 5 millions during 1937, were able to maintain the 40-hour week spread over five days, with slight modifications, but economic difficulties deferred the full application of the French law to certain depressed industries. New Zealand is another country where, under a Labour government, the 40-hour week has been instituted by law. Holidays with pay are a legal right for all workpeople, manual and non-manual, in 22 countries, and in 14 other countries certain classes of workers have become entitled, under legislation, to paid holidays; but in Britain it is estimated that not more than 4½ million workpeople, about half of whom are manual workers, at present enjoy paid holidays.

In Britain, extension of trade-union organization among non-manual workers and the development of trade-union relations with other organized professions were a feature of 1937. Workers in local government service and in the nursing profession were brought more closely into association with trade-union organization through the establishment of a national advisory committee representing the Trades Union Congress and unions catering for local government employees, and a similar body for the nursing profession. Unions interested in the organization of nurses formed a federation during the year to promote trade unionism among them; and a charter was framed setting forth standard conditions in respect of hours of duty, overtime, annual leave, sick pay, superannuation, training, and amenities free from unnecessary restriction.

(W. M. Ci.)

United States.—Foremost among the factors contributing to the spread of labour organization in the United States during 1937 were the activities of the Committee for Industrial Organization (*q.v.*). In prosecuting its organizing campaigns, the C.I.O. created a nation-wide staff of organizers, recruited largely from among experienced officials of established unions. Substantial funds for financing these activities were contributed largely by the three most powerful unions in the C.I.O.—the United Mine Workers, the Amalgamated Clothing Workers, and the International Ladies' Garment Workers.

These campaigns of the C.I.O. met with unusual success. By the middle of 1937, unions affiliated with the C.I.O. had won contracts with the General Motors and Chrysler companies, the United States Steel Corporation, nearly all of the large companies in the rubber tyre industry, and with a considerable number of firms in the textile industry. In New York the C.I.O. union of Transport Workers was recognized by the major subway and bus systems of the city. At its first convention held in Atlantic City, Oct. 1937, the C.I.O. claimed that the number of unions affiliated with it had, in two years, increased from 10 to more than 30, and their combined membership from something more than 1 million to nearly 4 millions.

Political Activity.—Together with these advances in the field of union organization, the C.I.O. undertook to promote and organize independent political action by labour. Through the Labor's Non-Partisan League, composed of both the American Federation of Labor and C.I.O. unions, but generally regarded as an arm of the C.I.O., the Committee participated actively in the municipal and State elections of 1937. The greatest victory earned by labour was in New York City, where the political organization of the trade unions, the American Labor Party, polled an unexpectedly large vote, and succeeded in electing a large proportion of the membership of the new city council.

Meanwhile, the American Federation of Labor set out to overtake its rival and recover its losses, and began also to make considerable gains. At the annual convention held in Oct. 1937, the executive council reported that the number of members withdrawn by the C.I.O. unions had been more than made up by gains in other directions, and that total membership amounted to 3,270,000. In the autumn of 1937, then, the aggregate membership of C.I.O., the American Federation of Labor, and the independent railroad brotherhoods exceeded 7 millions and was 2 millions greater than the previous maximum of 5 millions reached during the business boom of early 1920.

In the advances made by organized labour during the year, the state of business, the tactics employed by the C.I.O., and decisions of the courts bearing on the law of trade unions played a determining rôle. Amid the prevailing uncertainties of the whole post-depression period, employers, fearful of stoppages and loss of orders, were inclined to make concessions. The unions, consequently, by calling strikes or threatening to do so, took advantage of these favourable conditions, and managed to wrest union agreements from a substantial number of employers in a great variety of industries.

Supreme Court Decisions.—At the same time the position of unions was strengthened by the clarification of the basic national trade-union law. The National Labor Relations Act, signed by the President, July 5, 1935, had been promptly challenged by employers, and the board, created by the act, had become involved in prolonged litigation. As long as the meaning of the law and the powers of the board remained in doubt, the law had been ineffective. On April 12, 1937, the United States Supreme Court delivered five decisions on cases in the steel, clothing, automobile, newspaper, and bus transportation industries, establishing the constitutionality of the act and sustaining the powers of the National Labor Relations Board. These decisions, which affirmed the right of Congress to regulate labour relations in manufacturing industries, added directly and indirectly to the power of organized labour. In a short while the law was invoked by unions all over the country, and many employers, now faced by the stringent terms of the Labor Relations Act, withdrew their opposition to labour organization, and began to bargain with one or another union.

The Stay-in Strike.—Probably the most potent weapon employed by organized labour in this period was the stay-in, or 'sit-down', strike. This device, whereby groups of workers (often a relatively small minority) occupied a plant and held it until they had brought the employer to terms, was most extensively used by the C.I.O. By means of this type of strike, union agreements were made with the Goodyear Rubber Co., General Motors, Chrysler, and with many smaller firms. The disrepute into which the use of this weapon brought local agencies of law enforcement, and the rising resentment of employees unwillingly thrown out of work, produced a hostile public opinion, and soon forced the abandonment of the stay-in strike. But during the short period in which it was used, it proved the most effective weapon of the C.I.O. and the source of its most spectacular victories.

The climax of the strength of organized labour was reached in the summer of 1937. By that time the influence of increasing wages and costs, the reactions of the public and unorganized labour to the stay-in strike, and the disturbances associated with the conflict between the American Federation of Labor and the C.I.O., began to make themselves felt in the more stubborn opposition to unions by employers. In a test of strength between the steel-worker's union of the C.I.O. and several of the largest independent steel companies, involving long and costly strikes and widespread violence, the steel companies refused to yield or to submit the issues to a mediation board appointed by the President, and the union, apparently unable to win the support of the majority of the steel workers, was forced to call off the strike. This major defeat and the turn in business conditions which became noticeable by the end of the summer resulted, before the year was over, in a considerable decline in union membership and prestige. These same factors also produced great pressure on the leaders of the two factions in organized labour to end their quarrels and to restore unity to the labour movement. Peace conferences between committees representing the C.I.O. and the American Federation of Labor were accordingly begun in Washington on Oct. 25, 1937. But the conflict had apparently inflicted wounds too deep to cure, and on Dec. 20 peace negotiations were abandoned. (*See* also American Federation of Labor; Committee for Industrial Organization; Strikes and Lock-outs.)

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TRAFFIC LAWS AND OFFENCES. No new legislation regarding motors, motoring, or the use of the roads was passed in Great Britain in 1937, but several new regulations were issued by the ministry of transport under existing statutes. On Jan. 1 an Order in council came into force, making various new regulations as to the construction and use of motor vehicles, requiring the use of guard rails on commercial vehicles, making the use of safety glass for wind-screens and all front windows compulsory, and compelling the fitting of an efficient screen-wiper on all fixed wind-screens. New lighting regulations came into operation on Oct. 3, providing that all head-lamps must be fitted with an anti-dazzle device which will deflect the beams of light downwards and to the near side, so that they cannot dazzle a person standing 25ft. away whose eye-level is not less than 3ft. 6in. from the ground; or alternatively that head-lamps must be capable of being extinguished at the same time as other anti-dazzle lamps are brought into operation. The power of side-lamps must be limited to 7 watts, and frosted or other light-diffusing glass must be used for them. It was announced during the year that the Traffic Advisory Council is considering, on the Government's behalf, the possibility of requiring cyclists to be registered, and of introducing riding tests, penalties for careless riding, and compulsory rear-lights for cycles. The minister of transport had also under consideration the question of compelling all cars to carry a device indicating compliance with the 30-m.p.h. limit in all built-up areas. In December it was announced that a select committee of the Lords was being set up to consider the problem of lessening road fatalities. For statistics of motoring offences in Great Britain, *see* Crime: § *Great Britain.* (X.)

United States.—There were no striking developments in traffic laws or enforcement methods during the year 1937 in the United States. Such changes as have taken place are the result of gradual improvements during the past several years. Beginning in 1934, there was a resumption of an increase in automobile registration and use due to improved economic conditions. This led to a marked aggravation of traffic difficulties in the two fields of traffic accidents and traffic congestion. Most of the larger cities are hard pressed to maintain a reasonable semblance of safe and orderly movement.

To meet this situation, there has been no development of new technique in traffic control methods, but rather a refinement in methods already established. There is a growing emphasis upon the use of factual information as a basis for legislation and control methods in general. For this, many cities are better equipped than heretofore, owing to traffic surveys conducted in recent years largely as relief activities.

Concurrently, there is a growing recognition that the planning of control methods must be delegated to properly trained experts. To this end there has been established a graduate training school in the Harvard University bureau for street traffic research, where from 25 to 30 graduate engineers are trained and placed each year. This training agency is provided with 23 fellowships, 15 from the Automotive Safety Foundation, and 8 from the Alfred P. Sloan, Jr., grant.

Parking regulations caused the greatest concern to American cities in the year 1937. This has been partly due to the fact that kerb parking increases traffic congestion, and partly due to the fact that business is discouraged because many who wish to conduct business cannot find parking places. Many cities have installed parking meters, usually requiring the deposit of five cents per hour for permission to park at the kerb. Other cities, most notably New York, have provided increasingly rigid control of parking upon the more crowded streets. (M. Mc.C.)

See also Town and Country Planning: § *United States.*

TRANSCAUCASIA: *see* Armenian S.S.R.; Azerbaijan S.S.R.; Georgian S.S.R.

TRANSJORDAN. Transjordan lies to the east of Palestine, and is bounded on the north by Syria, on the north-east by Iraq, on the south-east and south by Saudi Arabia. Great Britain, as a mandatory of the League of Nations, is responsible for its administration. The powers conferred by the mandate are, in fact, exercised, as the result of an agreement made in 1928, by His Highness the Amir Abdullah ibn Hussein, through the constitutional machinery defined in an Organic Law. The Amir is advised by a British Resident responsible to the High Commissioner, who is also High Commissioner for Palestine and resides at Jerusalem. The capital of Transjordan is Amman. The national flag consists of three equal horizontal stripes of black, white, and green, with a red triangle based on the flagstaff side and containing a seven-pointed white star.

Area and Population.—The area of Transjordan is 34,000sq.m., and the population, of which no census has yet been taken, is about 300,000. Arabic is the official language and the medium of education.

History.—The outstanding political event of the year was the publication of the Peel Commission's Report (*see* Palestine). If its proposals were to be carried out, Transjordan would be amalgamated with the larger but less fertile part of Palestine, and would acquire outlets to the Mediterranean at Gaza and Jaffa. At the same time, it would become, through the termination of the mandate, a sovereign State. The plan has obvious attractions for the Amir, but the strength of Arab feeling against the partition of Palestine, both in the neighbouring States and in Transjordan itself, is also an important factor in the situation.

Trade, Communications, Finance.—The total value of imported goods in 1936 was £P 794,956. There are no complete statistics of exports, but the balance of trade is known to be unfavourable. A boycott of Jewish goods in 1936, coupled with the devaluation of the franc, led to an increase in trade with Syria, at the expense of Palestine. Imports carried through Syria, which in 1933 had been only 5 per cent. of those brought through Palestine, rose in 1936 to 84 per cent. The unit of currency is the Palestinian pound, at parity with sterling. The budget of Transjordan is balanced by means of grants-in-aid from the mandatory Power. The estimated revenue for 1936–37 was £P 420,000, of which only £P 277,000 was to be raised locally.

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TRANSVAAL, THE, annexed by Great Britain during the South African War of 1899–1900 from the former Boer Republic, became, in 1910, an original province of the Union of South Africa. It lies between Southern Rhodesia and the Bechuanaland Protectorate on the north and the Orange Free State and Natal on the south; its area is 110,450sq.m., and population (1936) 3,355,200, including 820,620 of European extraction, 2,445,045 natives, and 25,561 Asiatics. Pretoria (pop. 76,250) is the administrative centre, but Johannesburg (*q.v.*) the largest town.

Cattle-raising and mining are the main industries; gold and diamonds are mined in great quantities, the total value of gold produced in the Transvaal from the time of the earliest records to 1936 being estimated at £1,488,294,692, and that for 1936 alone at almost £80 millions. During 1937, the Rand railway electrification scheme was almost completed, and it was anticipated that early in 1938 the whole system from Randfontein to Springs would be electrically worked. Some rioting among natives occurred in September at Vereeniging, three police officers being killed and 72 natives arrested.

Primary and secondary education is administered by the provincial authorities, the total expenditure for this purpose during 1935–36 being £3,092,660, of which £126,270 was on native education.

The total revenue for 1935–36 (including Union subsidy) was £5,400,114, and expenditure £2,263,457. For further details and history in 1937 *see* SOUTH AFRICA, UNION OF.

TRINIDAD AND TOBAGO. British West Indian colony comprising Trinidad and Tobago islands, off the coast of Venezuela; language, English; capital, Port of Spain (pop. 75,680); governor (1937) Sir A. G. M. Fletcher. The area is 1,980sq.m. (Trinidad, 1,862sq.m.). Population (1931 census), 412,783 (387,425 in Trinidad); official estimate (1936), 448,253. West Indians comprise 30 per cent. of the population. In June, serious strikes by unorganized labour in the oil-fields and the sugar plantations spread to Port of Spain, paralysing business for a day. Serious rioting occurred, but was suppressed by the local police before the arrival of two British cruisers which had been summoned by radio. In December, the strike leader was tried for sedition, and sentenced to two years hard labour. Meanwhile, a royal commission began a formal investigation.

West India Committee]

TRINIDAD: FREDERICK STREET, PORT OF SPAIN

Trinidad has excellent steamship lines and air service. There are 123m. of railroad, 1,083m. of main highways. Imports for 1936 totalled £5,437,599, and exports £5,988,907 (besides £1,167,322 in transit from Venezuela), representing a 20 per cent. gain. Trade is principally with Great Britain, the United States, and Canada, which account for 40 per cent., 17 per cent., and 12 per cent. of imports, and 44 per cent., 15 per cent., and 11 per cent. of exports. Leading imports are machinery, foodstuffs, and cotton textiles. Petroleum and asphalt comprised 59·07 per cent. of exports in 1936, with sugar and cocoa next. The principal agricultural products are sugar, cocoa, coconuts, and citrus fruits. Petroleum and asphalt are the leading resources. The monetary unit is the Trinidad dollar, fixed by law at 4·40 to the pound sterling. Revenues for 1936 were £2,512,063; expenditures were £1,834,137. Public debt was £4,054,963 in 1936. In 1936, there were 301 primary and other schools, with an enrolment of 76,350, and four teacher-training colleges. (L. W. BE.)

TRISTAN DA CUNHA. A British possession, the only permanently inhabited island of a South Atlantic group including Inaccessible Island and the three Nightingale Islands, in lat. 37° 6′ S., 12° 2′ W., far removed from any sea route, and having only an exposed roadstead. Arrangements are made for the islands to be visited at intervals of about a year, generally by a cruiser from Simonstown, South Africa.

The population of under 200 are descendants of a garrison placed there during Napoleon's imprisonment at St. Helena, many of them being descendants of Corporal Glass of that garrison. The island is self-supporting, but dependent for comforts on visiting ships and gifts collected by missions in England. Since 1933, there has been a resident chaplain, the Rev. Harold Wilde, maintained by the Society for the Propagation of the Gospel, who acts as doctor, schoolmaster, and magistrate. There are about 170 cattle, 600 sheep and other livestock, and potatoes are raised.

In 1937, plans were in preparation for a short stay by a meteorological expedition.

TROPICAL DISEASES. The European often possesses little immunity to the various bacterial and parasitic diseases which are rife amongst the natural inhabitants of tropical and sub-tropical countries, while he in turn has introduced a number of respiratory diseases, such as influenza, tuberculosis, and measles, which are causing a high mortality amongst non-immune natives.

Apart from infections, however, the influence of climate, different food, and modified social life calls for considerable physiological and psychical adaptation on the part of the white man, the failure of which results in breakdowns of different types. In heat stroke (1) the final breakdown in the thermal equilibrium between man and his environment is brought about by derangement of the nervous mechanism controlling heat production and heat loss, by circulatory failure, and by dehydration following depletion of fluid. Heat cramp is caused by excessive loss of sodium chloride through sweating, and the cure lies in increasing the intake of common salt.

Amongst the food deficiencies, pellagra, beri-beri, and tropical macrocytic anaemia call for special comment. Recently it has been found that vitamin B_2 consists of three components, lactoflavin, vitamin B_6 (' rat dermatitis factor ') and pellagrous preventing or p.p. factor. Specific anti-pellagrous materials include yeast, wheat germ, ventriculin which is prepared as an extract from hog's stomach, and liver extract; and by giving these substances in adequate quantity in addition to a well-balanced diet of 4,000 calories daily, a great reduction in the mortality rate of pellagrins has been obtained. Evidence is accumulating that p.p. factor is closely related chemically to nicotinic acid, from which it may be formed within the body. In Egypt, the administration of nicotinic acid has been found to hasten the subsidence of erythematous skin lesions, while in America recent reports (2) indicate that it promptly relieves the alimentary features and causes the porphyrin pigment in the urine to disappear. The demonstration of coproporphyrins (3) in the circulation and urine is of considerable interest, since it may explain pellagra dermatitis and its relationship to sunlight.

Since the production of vitamin B_1 in pure crystalline form, remarkable therapeutic results have followed its parenteral administration in patients dying of acute beri-beri in Malaya, China, or elsewhere. Vitamin B_1 is concerned with carbohydrate katabolism, and in its absence pyruvic acid has been found to accumulate gradually in the brain and kidneys of animals deprived of B_1 as well as in the blood, urine, and cerebrospinal fluid in human beri-beri (4), in fulminating cases of which the pyruvic acid is restored to normal levels within 10 to 15 hours after intravenous administration of 5 mgm. of pure vitamin B_1.

In the past, tropical macrocytic anaemia has been ascribed to diets deficient in extrinsic factor which is found in such foods as meat, eggs, whole cereal and yeast. Recently, in rhesus monkeys, in which this disease had been experimentally induced, injections of liver extract in the form of campolon (Cohn fraction) proved effective, whereas injections of anahaemin (Dakin and West fraction) failed (5). Similar findings have been recorded in man. Both these extracts are effective in Addisonian pernicious anaemia. The conclusion reached is that some factor other than Castle's extrinsic factor must be responsible for the dietary deficiency in tropical macrocytic anaemia. Though previously only recognized in the tropics, this disease has recently been found in Macedonia, especially amongst Greek refugees from Asia Minor (6).

Since 1931, when Pawan discovered negri bodies in the brains of animals, man, and bats in Trinidad, it has been ascertained that the blood-lapping bat, *Desmodus rotundus*, transmits paralytic rabies to both animals and man there. Once patients develop symptoms, death invariably follows. The point of entry of the virus apparently modifies the clinical picture, for typical hydrophobia sometimes follows bat-bite on the face (7).

In Africa, immunity of man to yellow fever (8) (as determined by blood tests in mice) proves to be much less widely distributed than was formerly thought, while the presence of immune bodies in the serum of warm-blooded animals there raises the question of their acting as reservoir hosts (9). Prophylactic immunization in man with natural yellow fever virus attenuated by tissue culture is being widely used. Febrile reactions associated with headache and backache not infrequently occur about the fourth or fifth day; a more serious result is the development of jaundice and hepatitis some two or three months later (10).

The great malaria epidemic in Ceylon in 1935, which was preceded by drought and famine and caused 80,000 deaths within seven months, has continued to attract attention. The most recent view (11) is that this epidemic was due to an enhanced reproductive vigour of the endemic strain of parasite induced by repeated passage through non-immune individuals; this, in turn, was made possible by the great increase in anopheline mosquitoes which preceded and accompanied the epidemic. The new synthetic remedies—atebrin and plasmoquine—are now widely used; it is generally agreed that they have a wide sphere of usefulness, but should only be taken under medical supervision. Quinine administered by the mouth remains the sheet anchor for the mass treatment of malaria during epidemics and in village populations in endemic areas. (*See* also MALARIA.)

Blackwater fever, which first gave to Africa the name of ' The White Man's Grave ', is found to be more prevalent in Macedonia to-day than anywhere in the tropics (12). The susceptibility of its population has been rising during the past 14 years, and this may well be related to the large immigration of Greek refugees from Asia Minor, where malaria was either absent or of negligible importance. Biochemical studies (13) have shown the presence of a new pigment, pseudomethaemoglobin, which occurs with great regularity in the blood of severe cases, while records from Africa (14) confirm the value of blood transfusion as a life-saving procedure under specified circumstances.

In experimental trypanosomiasis (sleeping sickness) the trypanocidal activity of several new arsenical compounds synthesized in the chemo-therapeutical laboratories of the Medical Research Council has been tested. The most promising—neocryl—has recently been tested in human sleeping sickness in Africa, but results (15) so far do not indicate its superiority to tryparsamide.

Ankylostome anaemia (16) originates from loss of blood due to the feeding habits of the hook-worms in the human intestine, and the loss has to be made up from available iron in the food and iron stored in the body. The first stage in its cure is to eradicate the worms, and the second, iron medication. Tetrachlorethylene (17) is reported to have a cure rate of about 90 per cent., especially for the New World species *Necator americanus*. For ascariasis or round-worm infestation, the new drug, hexylresorcinol, is stated to have a cure rate of from 90 to 100 per cent.

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(N. H. F.)

TROPOSPHERE, THE. The lowest part of the earth's atmosphere is called the Troposphere. It is bounded above by the Stratosphere (*q.v.*). As the atmosphere is transparent, a great part of the sun's rays penetrate the whole atmosphere without raising its temperature. Only the surface of the earth and of the water is heated by these rays. The earth's surface in its turn heats the lowest layer of the atmosphere. The heated air expands and becomes lighter. It consequently tends to leave the earth's surface and ascend. As this cannot take place everywhere simultaneously, ascending currents of air are formed at different points. At these points air is drawn along the earth's surface from other regions. Hence arise the winds. As the currents of air reach, in the course of their ascent, regions of lower pressure, they expand, and consequently cool. This cooling, due to adiabatic expansion, as it is called, lowers the temperature by almost exactly 1° C. per 100m. (110yd.) altitude. This is the reason why the air in the hills is colder than it is in the plains. When the ascending air has absorbed a great deal of water-vapour from warm damp ground or from the warm sea, this water is precipitated by condensation as the air rises. If the temperature is above freezing-point, minute drops of water are formed (clouds and mist) which merge into larger drops and form rain. If the temperature is below freezing-point, clouds of ice crystals are formed and there is snow. The cooling of the ascending column of air has the further effect that at a certain altitude the ascending power of the air is exhausted. The air now ceases to rise and begins to spread horizontally, till at other points it acquires a downward movement. In this way the air in the Troposphere is constantly executing vertical revolving movements; it is in rotation, hence the name Troposphere (Gk. *τρόπος*, turn). In certain cases the phenomena described are purely local, the currents rising no more than a few metres. In other cases the phenomenon assumes larger proportions. In summer, when there is fine weather over a plane that is already warm, a current of air is developed, which reaches a height of several kilometres. It is often topped with a fair-weather cloud. Over the great land-masses ascending currents are general in summer. This results near the ground in the air being drawn from the marine areas; hence the monsoons. In winter the phenomenon is exactly reversed. In the tropics and the Arctic regions, the movement of the warm air is continuous, ascending in the former, descending in the latter.

The altitude of the Troposphere is identical with that reached by the highest columns of air, an average of 12 km. (7 to 8 miles). Further details in regard to the altitude of the Troposphere and the temperatures prevailing there may be found in the article Stratosphere.

The rotation of the Earth causes a deflexion of the horizontal currents of air to the right in the northern, to the left in the southern hemisphere. Hence the cyclones and anticyclones in the Troposphere. In the northern hemisphere the clockwise rotating currents revolve at fairly high pressure round the regions in which fine weather in general prevails. These regions are called in meteorology anticyclones. The anticlockwise rotations, cyclones as they are called, revolve at low pressure round regions where the weather is bad. In the southern hemisphere, on the other hand, anticyclones revolve anticlockwise and cyclones clockwise. Here also anticyclones bring good weather, cyclones bad weather. (A. Pi.)

TROTSKY, LEV DAVIDOVICH (1877–), Russian statesman and international revolutionary leader; since Jan. 1928 an exile, first at Alma-Ata, later at Prinkipo (in the Sea of Marmora), in France and Norway, and since the end of 1936 in Mexico, from which country he has continued propagandist activities directed towards his ideal of a communist world revolution in opposition to the current Stalinist policy of the Comintern (*see* International). In Feb. 1937, in an interview, Trotsky accused the Soviet Union of 'sabotaging' Spanish democracy by withholding its support in the interests of France. Later in the month some disturbances occurred in the neighbourhood of Trotsky's Mexican retreat as the result of disputes between communist pro- and anti-Trotskyist factions. A statement issued in June confirmed the existence of a Trotskyist 'Fourth International' with a membership of 30,000; and in the same month Trotsky telegraphed to the central executive committee of the Russian Communist Party at Moscow denouncing Stalin and his policy and calling for a reconstruction of the Soviet régime on democratic lines. In the autumn, a slight slackening of the 'anti-Trotskyist' purgative measures of the earlier part of the year taking place in Russia (*see* U.S.S.R.), rumours arose of attempts at mediation between Trotsky and Stalin which might bring about the former's return to lead the Red Army once more.

During the year Trotsky issued 'The Revolution Betrayed', an attack on the Stalin régime and a further attempt to prove his old thesis—the impossibility of maintaining a revolution in a single country.

TRUCIAL SHEIKHS, THE: *see* Arabia.

TUBERCULOSIS. Recent research into the aetiology of tuberculosis has refuted certain claims and provided fresh data. Thus the existence of an ultravirus is no longer upheld, though it is maintained that the life-cycle of the tubercle bacillus may include filterable immature forms. The claims made by Loewenstein concerning the frequency of bacillaemia, not only in all forms of tuberculosis, but also in conditions hitherto not considered tuberculous in origin (such as dementia praecox and rheumatism), have finally been exploded by the extensive investigation carried out by prominent bacteriologists in several countries under the auspices of the Health Organization of the League of Nations. The work of the American team, headed by Florence Seibert, who have succeeded in preparing a *purified protein product* (PPD) from Old Tuberculin, is outstanding in that it provides a testing material for tuberculous infection constant in potency, thus enabling pooling and comparison of results in all parts of the world. Extensive routine culture of sputa particularly by Jensen in Denmark and Stanley Griffith in Great Britain, has shown the existence of strains of the tubercle bacillus that do not conform either to the human or bovine type, and has led to detection of an appreciable number of cases of pulmonary tuberculosis due to the bovine bacillus. The dissociation between hypersensitivity and immunity in the phenomenon of allergy has now been definitely established, and attempts are being continued experimentally to find in desensitization a basis for treatment. Ranke's three-stage conception of the evolution of tuberculosis is finding greater favour, and has led to the differentiation of phthisis into haematogenous and bronchogenic forms—a distinction of importance both in prognosis and treatment. The claims made in regard to the inheritance of tuberculosis as a result of the work in Germany on twins have been severely criticized.

The search for tubercle bacilli by culture of the sputum and by investigation of the gastric contents of both children and adults is an important advance in diagnosis and a help in assessing healing of a pulmonary lesion. Radiography of the chest is now universally recognized as indispensable in the diagnosis of pulmonary tuberculosis; and an ancillary method recently introduced—tomography—is of great assistance in detecting cavitation (and determining its exact position) in heavily-shadowed lung fields.

Increasing value is attached to certain aids to prognosis in pulmonary tuberculosis—the blood sedimentation rate and the white blood cell picture. The latter method must be regarded as still in the experimental stage, and many authors claim that it offers little advantage over the blood sedimentation test. Further follow-up statistics show that the outlook for the sufferer from phthisis has altered little unless he belongs to the group allowing of application of collapse measures. In connexion with the latter, attention has been drawn to the unfavourable prognostic significance of associated tuberculous tracheobronchitis; bronchoscopy is therefore a valuable investigation in pulmonary tuberculosis. The introduction of bronchospirometry by Jacobaeus, which enables the functional capacity of each lung to be determined separately, should be of great assistance in the decision to apply collapse measures in bilateral disease—an important factor in prognosis. Finally, the existence of a chronic form of miliary tuberculosis of the lungs is now recognized in Anglo-Saxon literature; the outlook for the patient with miliary shadows in the skiagram is no longer considered invariably fatal.

Marked progress has been made in the treatment of tuberculosis. Conservative treatment is increasingly adopted in non-pulmonary tuberculosis. The principle of prolonged bed rest in the treatment of phthisis is now recognized and the need for rendering the sputum free from tubercle bacilli by the application of special forms of treatment, particularly collapse measures, both to improve the outlook for the patient and to reduce the human reservoir from the public health aspect, is increasingly realized. Better results are claimed for the operation of thoracoplasty when combined with apicolysis (Semb's operation), and a new method—extrapleural pneumothorax—is being explored. The publication of Alexander's monumental book on collapse therapy will help to indicate the important rôle which it plays in the treatment of phthisis, and to stress the need for combining the various procedures available. Sanatoria for the tuberculous are now recognized as institutions for active treatment.

Much interest attaches to the epidemiological aspects of tuberculosis. The total mortality from all forms continues to fall, but this fall remains inconspicuous in the age period 15–30, particularly in females. Knowledge of the infection and morbidity rates is accumulating as the result of radiological and tuberculin testing surveys. These are now being carried out on a very extensive scale in America. The surveys are helping to detect large numbers of early cases of pulmonary tuberculosis, and point to the increased risk to which medical students and nurses are exposed. It has also been shown that in some districts a large proportion of the population reaches adolescence without having been infected.

The control of bovine tuberculosis in the United States is proving an unqualified success. In Great Britain it remains a serious problem. Pasteurization of milk is increasingly carried out in large towns, but the measures to deal with the disease in cattle are recognized as quite inadequate. The Office international d'Hygiène publique has published valuable short reports on bovine tuberculosis from various countries. The veterinarians of the United States have completely abandoned BCG in their programme of tuberculosis control among cattle, but in England very encouraging experimental results have been published. Spahlinger's vaccine is also undergoing trial.

In man, BCG vaccination continues to be practised in several countries. In Norway, Sweden, and Denmark, it is applied to protect nurses or students found tuberculin-negative. There is no sign of vaccination being adopted either in Great Britain or the United States. The use of dead tubercle bacilli to produce immunity is again being investigated. (G. G. K.)

TUKHACHEVSKY, MIKHAIL NIKOLAEVICH, Russian soldier; born in the government of Smolensk in 1893; died June 12, 1937. For a biographical note, *see Ency. Brit.*, vol. 22, p. 538. He represented the Soviet Union at the funeral of King George V, and was to have been joint representative with M. Litvinov at the coronation of King George VI; but it was given out that he was unwell, and shortly afterwards he was arrested as a spy and a traitor. Together with seven other generals, he was found guilty and was shot.

TUNIS, a French protectorate in North Africa, lying between Algeria and Tripoli and extending to the Sahara. The ruler is the Bey, Sidi Ahmed, under the direction of a French Resident-General, M. Armand Guillon. The capital is Tunis. Area 48,300sq.m.; population (1931 census) 2,410,692, including 195,293 Europeans. The inhabitants are predominantly Mohammedan. Education is fairly well advanced.

Trade and Communications.—The principal products are wheat, barley, oats, wine, and olives; and there is an increasing output of phosphates. There are nearly 1,300m. of railways, and about 3,900m. of roads. Tunis is connected by air with Marseilles by Air France, and with Rome by Ala Littoria. (X.)

History.—The coming into power of the Front Populaire in France was the signal in Tunis for disturbances (*see* also ALGERIA). The administration of the Resident-General, M. Guillon, sometimes, particularly in the first months, showed weakness in dealing with the instigators of risings.

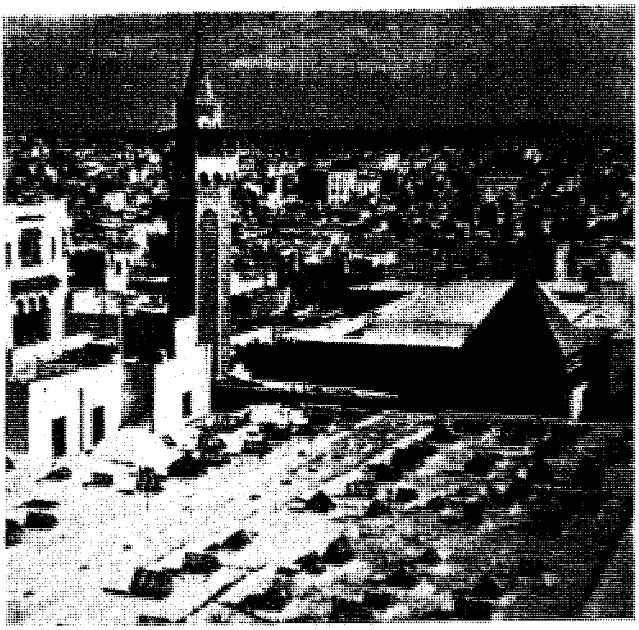


Photo Rap]

GENERAL VIEW OF TUNIS. IN THE FOREGROUND THE ROOFS OF THE 'SOUKS' (BAZAARS)

Strikes took place at Metlaoui (19 killed, 27 wounded, including 1 officer, 9 police or spahis wounded), and at M'Dilla on March 4 and 5. One of the leaders of the Nationalist movement, Habib-Bourguiba, manager of *L'Action Tunisienne*, returning from a stay in France, declared in an interview on May 6 that he had confidence in the Front Populaire, and that 'we are in a state of war with our enemies' (meaning the French). On July 9 the 'Father of the *Destour*', Sheik Talbi, coming from the East where he had been exiled, was welcomed with enthusiasm. But his understanding with the Young *Destouriens* was of short duration. Encounters took place between the partisans of the old *Destour* and the militant wing of the new—an example of what would happen if the authority of the protectorate were to disappear.

In July, the Resident-General promulgated a series of decrees reorganizing the administration and making changes in the personnel. This action may probably presage a more energetic policy and a reduction in the number of French officials.

A serious incident took place at Tunis on Sept. 20, when naval cadets from two Italian training-ships put themselves at the head of Italian Fascists and attacked the local offices of the Italian League for the Rights of Man and two other clubs, and killed a man. Considerable feeling was aroused in Tunis, and diplomatic protests were sent to Rome. (R. PIN.)

TUNNELS. The sciences and arts applied to tunnel design and construction have made such advance during the past 30 years that to-day with the basic tunnelling costs of labour and materials two to three times greater, one finds that the field cost of the product in some cases is but little greater and in exceptional cases less. The greater feasibility of driving in soft or unstable ground and rock has increased adoption of tunnels, especially for railways, highways, and aqueducts, under barriers such as cities, waterways, and mountains. The increased use of mechanical equipment is, however, limiting the opportunity to train young miners in the higher art of holding ground forces in cases where only manual work is feasible.

Recently in London, where practically all underground transit is in tunnel, another 16m. of route, or 32m. of tunnel, were begun. New York, on Dec. 21, opened a highway tunnel constructed by the port of New York Authority in the peculiar silt under the Hudson river. In addition, the construction of a pair of highway tunnels under the East river to Queens was begun, a work of considerable geological proportions in rock variegations and glacial formation. London began construction of another highway tunnel under the Thames at Purfleet, and is seeking parliamentary powers to duplicate the Blackwall highway tunnel built in 1895. Plans are laid for a tunnel under the Kiel canal (*q.v.*). Many tunnels are under construction throughout the world for hydroelectric, water supply, irrigation, and other uses, some of great length and some of great dimensions. The 31 tunnels in rock of the Colorado aqueduct represent almost 80m. of tunnelling.

Recent tunnelling with the aid of compressed air has not required any high degree of air pressures. The shortening of working shifts when air pressures exceed 18lb. per square inch has greatly increased costs. Added processes and comforts on behalf of health and safety have given the workers greatly increased immunity from compressed-air troubles. In view of alleged acquisition of silicosis in rock tunnel construction, investigations and dust-control experiments are being conducted. While the protection of the health of the workers is of prime importance, this present consciousness is particularly interesting so far as it concerns rock tunnels, where practically all drilling is now wet and has been for over twenty years. A recent survey of Great Britain reveals that the death-rate of hewers from 20 to 55 years is less than the death-rate of all males up to the age of 55 years and beyond that but little greater.

The following selected list gives some of the longest railway tunnels measured from portal to portal.

Name	Location	Length (miles)
Simplon	Alps	12·3
Appenine	Italy	11·5
St. Gotthard	Alps	9·3
Lötschberg	Alps	9·0
Mt. Cenis	Alps	8·0
New Cascade	Washington	7·8
Moffat	Colorado	6·2
Shimizu	Japan	6·1
Otira	New Zealand	5·3
Rogers Pass	British Columbia	5·0
Hoosac	Massachusetts	4·7
Severn	England	4·4
Mt. Royal	Montreal	3·3
P.R.R.	New York	2·6

TURKEY, republic of the Near East, comprising Asia Minor, the greater part of Armenia and Kurdistan, and a part of the European peninsula between the Black Sea and the Ægean: since 1923 a republic under the presidency of Kemâl Atatürk, formerly Ghazi Mustafa Kemal, last re-elected to that office in March 1935, with a single-chamber legislature (the Kamutay) of 399 members, and an executive consisting of ministers chosen by the president. Area, 295,000sq.m., of which about 9,205sq.m. are in Europe. Population (1935 census), 16,200,000, of various races, including considerable numbers of Kurds, Jews, Armenians, etc., who are in great majority Mohammedans, though Islam is no longer legalized as a State religion: in European Turkey and the Armenian districts there are many Christians. Education is free and compulsory, and very rapid strides have been made in this field in the last few years: in 1934–35 there were about 6,500 elementary and 120 secondary schools, with some 650,000 and 50,000 pupils respectively. Universities exist at Ankara and Istanbul. The capital is Ankara (pop. 125,000), but Istanbul (formerly Constantinople) is by far the largest city, with a population of *c.* 745,000. Izmir (Smyrna) has 170,000 inhabitants, and four other towns pass the 50,000 mark.

Agriculture is Turkey's chief industry; wheat, barley and other cereals, tobacco, figs, raisins, and nuts being the chief vegetable products. The mineral resources, though not yet extensively developed, are great, and include chrome, coal, and copper. A three-year plan for the development of this mineral wealth was approved in 1937, envisaging the doubling of the coal and chrome output. Manufactures are being likewise rapidly developed; an initial five-year plan of industrialization is almost completed, and a second began with 1937, largely devoted to the erection of power stations and the equipment of yards in which Turkey may build her own ships. Communications are being overhauled and extended throughout the country: over 4,000m. of railways are already opened, and some 600 miles are under construction. In 1937 Turkey owned some 195,000 gross tons of merchant shipping.

The 1937–38 budget balanced the country's revenue and expenditure at £37,400,000, allowing in addition for an extraordinary credit of £6,000,000 for defence and other public works. Income and land taxation, customs, and certain State monopolies are the principal sources of revenue. Trade figures for 1936 indicate imports of *c.* £15,320,000 and exports of *c.* £19,620,000. A national bank, the Merkez or Central Bank of the Turkish Republic, began operations, with the sole right of note issue, in 1931. There are four other state-controlled banks, besides the new Deniz or Sea Bank established in 1937 to concern itself with maritime trade: the Ottoman Bank, which has a branch in London, also operates throughout the country and the Near East from Greece and Egypt to Iran. The monetary unit is the lira or Turkish pound of 100 piastres, nominally valued at 18*s.* sterling, but exchanging at the end of 1937 at the rate of 6·20 Turkish pounds to the pound sterling.

Military service is universal and compulsory: the effective strength of the army is about 200,000 officers and men, that of the air force about 9,000, with about 400 first-line aircraft. The navy includes four battleships and cruisers, with smaller craft. In 1937 a law made women equally with men liable for military service, and even provided for the military instruction of schoolgirls.

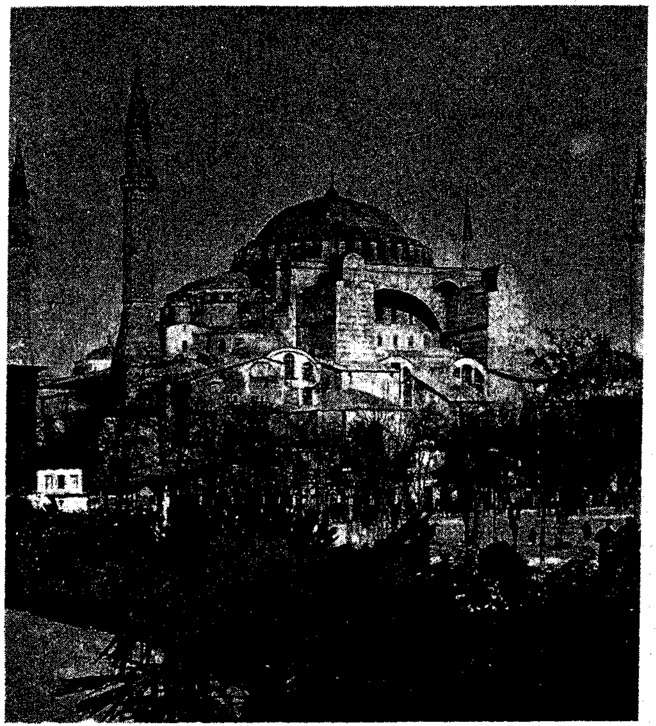
In February 1937 three constitutional amendments were adopted by the Kamutay or national assembly, the first adding to the clause establishing the republican form of government a declaration that the principles of the Republican People's Party should be followed, the second allowing of the expropriation of large rural properties for the benefit of the peasants, and the third denying the general religious freedom to sects suspected of holding secret meetings for their rites. On Sept. 27 the premier, Gen. Ismet Inönü, who had held office for 12 years, resigned, being succeeded by Djelal Bayer, a banker, and former minister of national economy, the personnel of whose new cabinet was announced on Nov. 9, the new premier promising that his government would endeavour to reduce taxation and the cost of living, and to further the development of industry and communications, while leaving suitable scope to private enterprise.

An insurrection among the tribesmen of the Dersim district of Kurdistan—a remote and mountainous region of central Asia Minor—occurred in June, the insurgents demanding the maintenance of the local tribal organization, freedom from taxation, and the right to carry arms; but after 30,000 troops and an air fleet had been sent to operate against them, the revolt was crushed in September, the leader captured, and in December 16 Kurds were sentenced to death for their participation.

The dispute with France regarding the future of the Sanjak of Alexandretta came before the League of Nations in January, and a solution was reached by compromise to the effect that the Sanjak should be internally independent, though Syria should control its foreign affairs, and that Turkish should be one of its official languages. This was accepted by Turkey in May, and the new régime came into force in November, after Turkey and France had entered into agreements guaranteeing the frontiers of the Sanjak and that between Turkey and Syria.

The refortification of the Dardanelles, which had been consented to by the League of Nations in Nov. 1936, was agreed to by Italy in Feb. 1937, but Germany at the end of the same month raised certain objections to the Montreux Convention by which the question had been regulated.

In February, negotiations were initiated for a new clearing agreement with Germany; and in May, friendship with Greece was reaffirmed by Gen. Inönü, the premier, during a visit to Athens. A trade agreement with Japan was concluded in August, and Turkey was a party to the treaty of Saadabad (*see* ISLAM) signed in July. The Turco-Syrian treaty of 1926 was denounced in December. In August, Turkish patrols in the Dardanelles were doubled, after attacks on Spanish government shipping there had been made by unidentified submarines; and after Turkey



Fox Photos]

ISTANBUL, THE MOSQUE OF ST. SOPHIA

had become a party to the Nyon agreement of September her naval forces in that quarter were further reinforced.

TURKMEN S.S.R., a member of the U.S.S.R. (*q.v.*), lies between the Caspian Sea in the west, the river Amu-Darya in the east, the republics of Kazakhstan and Uzbekistan in the north, and Iran and Afghanistan in the south. The capital is Ashkhabad; the national flag has a red ground, with gold initials TSSR in top left corner. Of the leading cities Ashkhabad had in 1936 102,500 inhabitants, and Krasnovodsk 27,000.

Area and Population.—Area: 171,428sq.m., chiefly comprising the Desert of Kara-Kum. The sparse population lives for the most part in the oasis districts in the south and east. Population (1933): 1,269,000 (rural 1,024,000, urban 245,000), of whom 72 per cent. were Turkmen. The main languages spoken are Turkmen, Russian, and Uzbek. The total number of scholars (1936–37) was over 161,000, and there were 4 higher educational institutions, and 28 technical schools.

History.—On March 2 the new Constitution was adopted by the Sixth Extraordinary Soviet Congress in Ashkhabad. The Republic consists accordingly of 2 regions and 32 districts. The capital Ashkhabad and 8 other towns form separate administrative units. 94·2 per cent. of the population took part in the elections to the Supreme Council of the U.S.S.R. on Dec. 12.

Trade and Communications.—Sown area (1936): 1,528sq.m. In 1937, 95·4 per cent. peasant households were collectivized. The main occupations are cotton growing in the oasis regions, fruit cultivation, cattle farming (caracul sheep), and riding-horse breeding.

Natural resources include oil and sulphur. The retail trade turnover (1936) was 0·8 milliard roubles. Exports: cotton, fruit, oil, carpets, caracul. The 1936 output of industry (at prices 1926–27) was 214 million roubles; and that of electricity, 48 million kilowatt-hours.

The only railway line is from Krasnovodsk on the Caspian Sea to Chardzhuy, with a branch line from Merv to Kushka. Railway freight carried in 1936 was 5,347,000 tons. (S. YAK.)

TWEEDSMUIR, JOHN BUCHAN, 1st Baron, G.C.M.G., C.H. (1878–), Governor-General of Canada. Private Secretary to Sir Alfred (Lord) Milner in South Africa (1901–03), Mr. Buchan was on the Headquarters Staff during the World War (1916–17), and became widely known as a writer of novels and romances, also of a *History of the Great War* and some biographies; he was M.P. for the Scottish Universities 1927–35, and Lord High Commissioner to the Assembly of the Church of Scotland, 1933 and 1934. He was appointed governor-general of Canada in March 1935, was raised to the peerage, and on Nov. 2 assumed office. In March 1937, Lord Tweedsmuir created a precedent by paying an official visit to President Roosevelt in Washington, Mr. Roosevelt having called upon him in Ottawa in the previous year. In May he went among the Mohawk Indians on their reservation at Brantford, Ont., and received the title of *Chetam Squamish* ('Chief of the Big Mountain'); then came a two-months' tour of the Far West of Canada, the Mackenzie Delta, Hudson's Bay, and the Arctic portion of the Dominion, when Indian chiefs and Eskimos were visited. A trip to Nova Scotia followed. Lord Tweedsmuir's Life of the Roman Emperor Augustus appeared in Oct. 1937, and in December he was elected Chancellor of Edinburgh University by a large majority.

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UGANDA. A British protectorate in East Africa, extending from south lat. 1° to the northern limits of the Albert Nile at Nimule, the eastern boundary being a line drawn from Mount Zulia on the Sudan border along the Turkana escarpment to the crater of Mount Elgon, and thence along the Malwa and Sio rivers into the north-eastern waters of Lake Victoria ; the territory is bounded S. by Tanganyika Territory, and W. by the Belgian Congo. Uganda is directly administered by the governor, Sir P. E. Mitchell, K.C.M.G. ; but the province of Buganda is recognized as a native kingdom under a *Kabaka*, H.H. Sir Daudi Chwa, K.C.M.G., a grandson of Mtesa. The administrative capital is Entebbe, and Kampala is the business centre.

The area is 93,981sq.m., of which 13,680 are water ; and the population (1931 census) was 3,556,267 Africans, and the estimated number of Europeans and Asiatics is 2,000 and 15,000 respectively. There is a number of native vernaculars, Luganda being used by the Kabaka's Government in Buganda. English is taught in the higher-grade schools.

Education for African boys begins in sub-grade schools, after which come elementary, lower middle, upper middle, and junior secondary schools, working finally up to Makerere College, which approximates to an East African Native University College.

In Sept. 1937, the report of a commission which had been examining the problem of education recommended the establishment of primary schools by the native administrations, and the amalgamation of the existing centres for advanced education as a ' Higher College of East Africa '.

L. Lippens]

A PYGMY OF THE BAMBOO FORESTS

Trade and Communications.—Cotton is the chief agricultural product, the estimated export in 1936 being 330,000 bales. There is indication of the existence of rich minerals, and the export of tin in 1936 was 575 long tons. Uganda is linked in customs union with Kenya and Tanganyika ; 1936 exports of the three territories were valued at £8,354,774, and imports at £7,377,279. There are 2,048½m. of main roads maintained by Government, and *c.* 4,800m. maintained by native administration. Roads are exceptionally good. The Cape to Cairo air service operates twice weekly from Entebbe. A new airport at Kampala was opened in July 1937. Cable and Wireless, Ltd., maintain the cable system and the Kenya Radio system. There are 330 route miles of railways under the Kenya and Uganda Railways and Harbours Administration. A steamer service is maintained on Lakes Victoria, Koga, and Albert.

The currency unit is the shilling, with subsidiary 50 cent silver coins and 10, 5, and 1 cent bronze. Revenue and expenditure for 1936 were £1,712,940 and £1,624,073 respectively. (*See* L. P. Mais, *Native Policies in Africa,* 1936 : H. B. Thomas and R. Scott, *Uganda,* 1936.)

UKRAINIANS, the most numerous of the Slavonic peoples, after the Great Russians, and one of the largest of all European peoples ; easily the largest European people no part of which to-day enjoys complete national independence. The chief home of the Ukrainians is the country north of the Black Sea, where they inhabit a territory stretching from the Carpathians to the Don and beyond. This was the medieval Russian land, and received the name of ' Ukraine ' (=' frontier ') only when the centre of the Russian power and population shifted northward under Tatar, etc., attacks. Then, too, Moscow began to claim to represent the true Russian stock, of which, it alleged, the Ukrainians or ' Little Russians ' were only a sub-branch. This brought about among the Ukrainians a counter-claim of a separate national identity and a movement towards national independence. The ideal of national unity was weakened by the fact that a large portion of the nation had come under Polish (later Austrian) sovereignty ; had been absorbed by the ' Uniate ' churches (Eastern churches in communion with Rome) ; and had half-evolved a separate ' Ruthene ' nationality. To-day the Ukrainians of Europe live under four governments : in the U.S.S.R. (nearly 35 millions, chiefly in the Ukrainian Soviet Socialist Republic) ; in Poland (five to six millions) ; in the Autonomous Territory of Carpatho-Ruthenia, within Czechoslovakia (about 500,000) ; and in Rumania (about 500,000–600,000). There are also many emigrants in the U.S.A. and western Canada. Historical, religious, and political differences still divide the different branches of the nation, and in the peasant masses national feeling is still largely dormant ; but in the future, the Ukrainian question will undoubtedly become a problem of the first magnitude. (C. A. M.)

UKRAINIAN S.S.R. Politically and economically the second most important Republic of the U.S.S.R. (*q.v.*),

Planet News]

UKRAINIAN S.S.R. A STREET IN A NEW CITY BUILT ROUND THE KRIVOI ROG METALLURGICAL PLANT

Planet News]

ON A UKRAINIAN COLLECTIVE FARM. WOMEN WORKERS GOING OUT TO THE FIELDS

in the south-west of the Soviet Union. It borders on Rumania, Poland, White Russia, and the R.S.F.S.R., the southern frontier being formed by the Black Sea, the Sea of Azov, and the Crimean Peninsula. The capital is Kiev; the national flag has a red ground, with a gold sickle and hammer and the initials УРСР in top left corner.

The leading cities, with 1936 populations, are Kiev 663,000, Kharkov 625,000, Odessa 533,000, Dnepropetrovsk (formerly Ekaterinoslav) 392,000, and Stalino (formerly Yuzovka) 276,000.

Area and Population.—Area: 443,000sq.km. Population (1933): 31,902,000 (rural 24,743,000; urban 7,159,000), of whom 80 per cent. were Ukrainians, 9·2 per cent. Russians, and 5·4 per cent. Jews. The chief languages spoken are Ukrainian, Russian, and Moldavian. The total number of school children (1936–37) was 5,227,000; 842,000 pupils attended schools belonging to national minorities. In 1936, there were 1,254 Russian, 134 Polish, 532 German, 398 Jewish, and 52 Bulgarian schools.

History.—On Jan. 30 the Ukraine received a new Constitution in conformity with the revised All-Union Constitution of Dec. 5, 1936. In accordance with paragraph 18 the Ukrainian S.S.R. also includes the Moldavian A.S.S.R. The number of regions belonging to the Ukraine was on Sept. 22 raised from 7 to 11. 97·8 per cent. took part in the elections to the Supreme Council of the U.S.S.R. on Dec. 12, the highest percentage in the Union. Hand in hand with election preparations a rigorous purge was carried out against persons suspected of Trotskyism. Even the Central Committee of the Ukrainian Communist Party, re-elected in June 1937, was repeatedly purged of 'Enemies of the People'. In September, Lyubchenko, the premier of the Republic, was officially announced to have committed suicide, owing to being involved in anti-soviet activities.

Trade and Communications.—Sown area (1936): 98,497sq.m. In 1937, 96·1 per cent. of peasant households were collectivized. The main agrarian products are grain, sugar beet, and sunflowers. Cattle breeding is also important. The natural resources include coal (Donets basin), valuable iron-ore, manganese, non-ferrous metals, salt, mercury, and, in the north, timber.

The retail trade turnover (1936) was 16·4 milliard roubles; and the output of industry (1936, at prices of 1926–27) was 14·616 million roubles.

The Ukraine contains one-sixth of the total railways in the U.S.S.R., and the freight carried in 1936 was 293,919,000 tons. (S. YAK.)

UNEMPLOYMENT decreased substantially during the first three-quarters of 1937 in the 28 nations for which statistics were available. Some countries emerged from the unemployment morass in which all were entangled during the early '30s; others reduced unemployment to a point where it was not serious. France, Denmark, the Netherlands, Austria, Great Britain, Poland, Canada, and the United States still faced troublesome unemployment situations, and the United States plunged into a business recession during the autumn of 1937 which displaced more than a million people from their jobs before Dec. 31.

The unemployment statistics of many nations are distinctly unsatisfactory, and conclusions drawn from them are open to suspicion. The available figures are of two principal kinds, each gathered in several different ways; statistics of employment, *i.e.* of the number of people at work, and statistics of the number of people in need of work. Employment statistics are derived from 'establishment' reports collected by mail or through field agents or labour inspectors. Unemployment statistics are furnished by the employment exchanges (applications for work), unemployment insurance systems (applications for benefits), unemployment relief records, reports of trade union secretaries, and censuses of unemployment.

The various types of statistics agree reasonably well in their picture of what happened in the different countries during 1937, but not always upon the extent of the changes which occurred. In France and Canada, for instance, the employers' reports indicate more improvement in employment during 1937 than do the labour exchange figures; but in Czechoslovakia the labour exchange figures suggest more improvement in the employment situation than the establishment reports.

Great Britain and Northern Ireland started 1937 with fully three-fourths of their wage earners (nearly 13 millions) under unemployment insurance. Of these, 1,676,966 were out of work in Jan. 1937. By June the number idle had decreased by 291,334 to 1,385,632. Small reductions each month brought the unemployed down to 1,333,278 by September, with a typical seasonal increase of 61,128 in October; by December the figure had risen to 1,665,407. British unemployment during 1937 showed steady improvement over 1936. Starting in January with 11·2 per cent. of the insured population idle (1936 annual average was 11·3 per cent.), the unemployment percentage dropped to 8·7 per cent. in June and fluctuated between 8·5 per cent. and 8·9 per cent. from June through October. In 1929 8·2 per cent. (on the average) were totally unemployed, and 2·2 per cent. on temporary lay-offs. The first 10 months of 1937 approximated the 1929 situation, and were in sharp contrast to the high figures of 1930–35. If the 4,750,000 not covered by the insurance act were included in the figures, the unemployment percentage would be more apt to fall than to increase, since military service, the police, civil service, teaching, and other relatively stable occupations were in this group.

Registrations of unemployed persons at the employment offices of the Irish Free State increased fivefold from the pre-depression years to 1935. Moderate declines in unemployment in 1936 were followed by a sharp decline in 1937. During the summer and autumn of 1937, unemployment appears to have been three times pre-depression levels and about 60 per cent. of 1936.

France and the Netherlands had similar records in 1937. Both experienced unusually severe unemployment in 1937. French unemployment reached its peak in 1935–36. The decline during 1937 (labour exchange registrations) was small. At the end of the year there were 357,856 unemployed, as compared with 410,785 in 1936. Employers' reports showed employment in the summer of 1937 at less than 80 per cent. of the 1930 level and man-hours worked at only two-thirds.

In the Netherlands unemployment reached its peak in 1935, when 36·3 per cent. of the workmen covered by unemployment insurance were idle (173,700). Jan. 1937 found unemployment at these peak levels, improvement from which brought the unemployed percentage down to approximately 26 per cent. through the summer of 1937—ranging from 119,000 to 133,000 idle each month.

Belgium, in contrast, showed marked improvement in 1937. Substantial progress in re-employment in 1936 continued through the summer of 1937. The employment index approximated 90 per cent. (of 1929) during the first eight months of the year. Insured workers idle decreased from 14·5 per cent. in January to 9 per cent. June–August. Days lost dropped from 3,881,345 in January to between 2,400,000 and 2,700,000 April–October. The number of unemployed was 163,039 in January, but 110,883 in August.

Denmark and Norway had a worse unemployment experience in 1937 than Sweden, judging from their statistics on trade union unemployment (which are really inadequate to represent national situations). Denmark's percentage of trade unionists unemployed was 21·1 per cent. through Aug. 1937 (1936 = 19·3 per cent.), Norway's through July, 20 per cent. (1936 = 18·8 per cent.), and Sweden's through August, 11·2 per cent. (1936 = 13·6 per cent.). In the summer of 1937 the Swedish figures were moving to pre-depression levels, averaging 8 per cent., but in Denmark the summer average was 14·7 per cent., and in Norway 16·3 per cent.

The German census of 1933 recorded 32,300,000 people in the employable population (including employers, farmers, etc.), of whom 5,900,000 were unemployed. The German sickness insurance figures report an average of 17,105,771 employed in 1936. Jan. 1937 showed 16,599,462, with an increase to 18,447,773 by April, 19,094,961 by July, and 19,105,121 by September—a gain of 2,505,000 from January to September, a part of which was seasonal. The federal institution for placement and unemployment insurance estimated that in 1936 the number of employees was 69·1 per cent. of the possible maximum; in the last quarter of 1936, 72 per cent.; in the first quarter of 1937, 74·3 per cent.; and in August, 76·6 per cent. The low point of the depression was 41·9 per cent. in 1932. The average number of applicants at employment exchanges dropped from 2,052,483 in Jan. 1937 to 1,182,979 in April, the lowest figure since Sept. 1928. The decline continued until in September the registrations were but 650,901. In December there was a sudden rise in the number of unemployed to 995,000.

Switzerland's employment exchange figures are unusually reliable measures of unemployment, because both the relief act of 1919 and the unemployment insurance law require applicants to register at the employment exchanges. From 1927 to 1929, 2·2 per cent. of the employable population were wholly unemployed and 1·6 per cent. partially. For practical purposes, this is zero unemployment in any country. In 1929 an average of 8,131 applicants registered at the employment offices (out of about 2 million employables). In Jan. 1937 the figure was 110,754. Month by month the registrations declined to 49,244 in July; then increased gradually to 56,804 in October. The first 10 months of 1929 witnessed a 50 per cent. decline in registrations for work, but there were still some 40,000 more workers idle than in 1929. The Swiss index of employment, based on establishment reports, rose from 72·2 in Jan. 1937 to 80·4 in September (1929 = 100).

The Italian index of employment (1929 = 100) was down to 78·5 in 1932 and back to 94·9 in 1936. In Jan.–March 1937 it was approximately 93, then rose to 106 by June. Taking into account the growth of population, these figures indicate that employment in the reporting establishments approximated to the 1929 level in the early summer of 1937.

Hungary's employment index and employment exchange registrations do not agree in their pictures of the Hungarian situation in 1937. The former showed employment in the reporting establishments to have approximated to the 1929 level during the first half of 1937, even allowing for some growth of population. The latter reveal that there were two-thirds as many registered for work in 1937 as in 1932, when unemployment was at its worst.

Czechoslovakia and Yugoslavia both had a rapid improvement in employment in 1937. Starting 1937 at 75·1, the Czechoslovakian index climbed to 96·8 by June and remained approximately there through September, representing employment of approximately 2,400,000 people compared with 2,500,000 in 1929. Employment exchange registrations were, in 1933, 738,267, and 667,486 in Jan. 1937. After February they declined rapidly to below 250,000, in July–Oct. 1937, the lowest figure since 1930. In Jan. 1937 12·9 per cent. of the insured workers drew unemployment insurance benefits ; by August but 6·2 per cent.

The beginning of 1937 found the employment index at approximately the 1929 level in Yugoslavia, but employment exchange registrations were high for such a situation. During the first eight months of 1937, employment improved steadily. By August some 115,000 more people were at work than the average for 1929, and the employment index reached 119·2 (1929 = 100).

The general trend of employment in the United States, Canada, and Mexico was upward during the first eight months of 1937. A sharp business recession in the United States displaced more than a million workers from their jobs between Oct. 15 and the end of the year, and increased unemployment in the United States to more than 10 millions, possibly above 11 millions.

The United States took a special census of unemployment, Nov. 20, 1937, which recorded 7,822,912 as unemployed (2,001,877 of whom were employed on Government relief work). This census was a voluntary report of individual citizens on forms left at all the homes by the postal service. Obviously many would neglect to send in the returns. Consequently sample tests were made on 1,455 rail routes to determine the margin of under-reporting. These tests indicated that a complete return might have shown as many as 10,800,000 idle on Nov. 20. The true number was probably somewhere between the 7,822,000 reported and 11,000,000. To this must be added the late November and December lay-offs, probably totalling more than 500,000. In the depths of the depression (1932–33) unemployment in the United States totalled from 13,500,000 to 14,500,000 ; the 1937 figure was discouragingly large when compared with the 1933 figure. Minimum unemployment for the United States would be about 2,000,000. The 1937 figures were increased, of course, by a growth of 5·7 per cent. in population in the United States between 1929 and 1936 coincident with a failure of the economic system to operate up to 1929 levels.

Canadian unemployment is measured in three ways ; by employment office registrations, trade union returns, and monthly reports of employers. The three types of statistics all reveal the same general facts for 1937. Registrations at the employment offices averaged over 90,000 in 1936 compared with 14,996 in 1929. In Jan. and Feb. 1937 there were over 99,000 registered and in March and April over 100,000. From May to September the numbers fell each month to approximately 77,000 in August and September. The figures indicate a definite decline in unemployment in the summer of 1937, but continuation of a large volume of unemployment.

Fox Photos]

UNEMPLOYED ENGAGED IN PHYSICAL TRAINING AT THE Y.M.C.A., LEEDS

The reports of union secretaries showed that from Jan. to April 1937 approximately 14 per cent. of their members were idle. From May onward the percentage dropped to 7·7 per cent. in August and September, the lowest unemployment figure for any summer subsequent to 1930.

The employer returns showed average employment down to 70·6 in 1933 (1929 = 100) and up to 87·3 in 1936. In 1937 the employment index climbed steadily from approximately 87 in the first four months to 95·9 in May, 103·4 in August, and 105·5 in September. Taking growth of population into consideration, the summer of 1937 saw unemployment approximating 1929 conditions, so far as the reporting industries were concerned.

The only figures on unemployment in Mexico are ' official estimates '. The figure given for 1930 was 75,695 ; for 1932, 339,378 ; for 1936, 186,906 ; and for the first four months of 1937, 187,357.

Japan was one of the nations with high employment in 1937, a by-product, of course, of war. Their employment index (1929 = 100) was 115·8 in 1936. It started at 119·6 in Jan. 1937 and rose to 129·1 by June. The Government's official estimates of unemployment in 1932 estimate that but 6·8 per cent. of their employable population were idle, a figure hard to reconcile with an employment index of 82 that year. For Jan. 1937 their unemployment estimate was 333,331 (4·2 per cent.), and it had declined to 289,450 (3·8 per cent.) by May. The 1937 estimate checks better with the employment index.

The Union of South Africa, in direct contrast with most of the world, experienced a comparatively slight decline in employment between 1929 and 1932—about 13 per cent.—and by 1936 her employment index was 25 per cent. higher than in 1929. In Jan. 1937 the index stood at 128·6, and reached 133 by April. It was above 131 in both June and July.

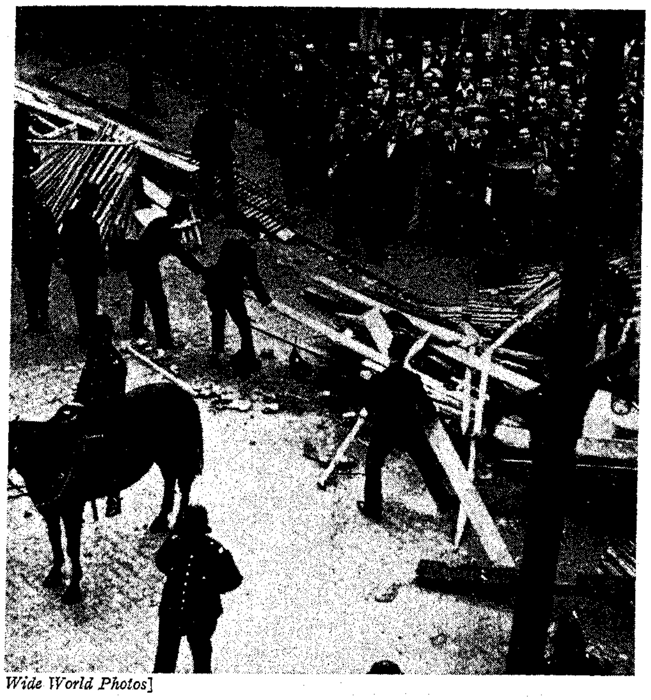
New Zealand's are entirely employment exchange figures. They indicate a gradual improvement in employment after 1934, with 1937 distinctly better down to August than any year since 1933. The numbers registered ranged between 34,000 and 37,800, Jan. to Aug. 1937, compared with over 50,000 in 1936 and higher figures in previous years.

The only unemployment figures for Australia are compiled from reports sent in by union secretaries—a not very satisfactory type of unemployment statistics. The Australian trade union returns show 31,000 or 7 per cent. of the union workers unemployed (monthly average) in 1927 ; a figure which grew steadily to 120,454 (29 per cent.) in 1932 and then gradually subsided to 53,992 (12·2 per cent.) in 1936. The figures ranged downward in 1937 from 44,004 (9·9 per cent.) in February to 43,584 (9·7 per cent.) in May, and 41,640 (9·3 per cent.) in August—a distinct improvement over any year since 1927.

The employment exchange registrations in Chile jumped from an average of 29,345 in 1931 to 107,295 in 1932, and then gradually dropped to 30,055 in 1934. Since then, applications for work have decreased sharply. Registrations were only 10,672 per month in 1935, 6,474 in 1936, and between 3,900 and 2,500 during the first five months in 1937, reflecting a high degree of employment in 1937. *See also* Social Security; National Insurance; Public Assistance; Relief; Special Areas. (D. D. L.)

UNIFORMS AND PROCESSIONS, POLITICAL. In many countries affected by the World War, after the close thereof conditions favourable to the formation of private armies arose: hence the 'coloured shirt' movements as, in Italy, the Blueshirt (Nationalist) and the Blackshirt (Fascist), which amalgamated in 1923; in Germany, the Brownshirt (Nazi); and in Egypt the Blueshirt (Wafdist) and Greenshirt (anti-Wafdist).

In Great Britain such development had little support, and, except in the case of the Blackshirts (*q.v.*), failed to take even temporary root. In 1936, in consequence of disturbances accompanying Blackshirt meetings and processions, particularly in the Jewish quarters of the East End of London, a Public Order Act dealing with the matter was passed and came into force on Jan. 1, 1937. Under its provisions the public wearing of uniforms in connexion with political objects, and the maintaining by private persons of associations of a military or similar character, are prohibited; and the chief officers (in London, the Commissioners) of police are empowered to regulate processions, their route, etc., and to apply to the local authority (in London, the Home Secretary) for the prohibition of all or any specified processions, the authority having power—with the approval of the Home Secretary—to grant such application in respect of definite areas and for a period of three months. Other clauses dealt with the possession of offensive weapons, the prevention of disturbance, and the use of provocative or insulting language.



Wide World Photos]

POLICE REMOVING BARRICADES IN LONG LANE, BERMONDSEY, WHICH WERE ERECTED IN CONNECTION WITH A FASCIST MARCH FROM WESTMINSTER

In London during 1937 a ban on political processions in certain east and south-east areas was imposed, and was extended from time to time.

UNITARIANS. The General Assembly of Unitarian and Free Christian Churches is the organization in which are federated the 300 to 400 congregations of this denomination in Britain and the Overseas Dominions. Its headquarters are at Essex Hall, Essex Street, London, the building wherein the first openly Unitarian congregation worshipped, before such worship was legalized in 1813. Its numbers at present remain fairly steady, for the recent experience of the supporters of this denomination has been rather to rejoice in the widespread growth of liberal religious ideas in other Protestant churches, and in the world at large, than to be rewarded by large accessions to their own ranks. Their annual report makes no boast of church expansion, but records much work for the maintenance of existing causes and the nurture and care of churches and Sunday schools. Lancashire still remains the county where these are most numerous and typical.

Contacts with liberal Christians of similar outlook in the eastern hemisphere are close and continuous—the Free Christian Churches of Holland, the Czechoslovak Church and its Patriarch, the ancient Unitarian Church of Transylvania (Rumania) and its bishop, the Unitarian Churches in Assam, and the Brahms Samaj of India. All these and others, together with the still more closely related Unitarians and Universalists of the U.S.A., are united in the International Association for Religious Freedom. This Association held a notable triennial congress at Oxford in Aug. 1937, attended by numerous delegates from 22 countries, under the presidency of Dr. Alfred Hall of Sheffield, a leading Unitarian minister.

UNITED CHURCH OF CANADA. The year 1937 found this church confident in the ideal and purpose which over 12 years ago brought about the union in Canada of Methodist, Presbyterian, and Congregational Churches. Among the important features in the life of the United Church during the year were the setting up of a strong commission to study the problem of the downtown city church, the first meeting of the Council of Theological Education to raise still higher the standard of theological colleges, the creation of an Economic and Social Research Commission, the visit of the Rev. R. B. Cochrane, D.D., as fraternal delegate to the British Churches overseas, the attendance by royal request of the moderator, the Right Rev. Peter Bryce, D.D., at the Coronation, the opening up of mission fields in the new mining areas of Canada, the attendance of nine delegates at the Oxford and Edinburgh Conferences, and an arrangement with the Baptist denomination to use United Church Sunday School publications.

In addition to the missionary and maintenance givings during the year of over $1,500,000, the United Church raised $10,000 to aid famine-stricken areas in China and India. Over $55,000 was subscribed to give special help to ministers stationed in the dried-out areas of Saskatchewan; 5,000 bales of clothing were sent to the west, and, in conjunction with other denominations, 830 carloads of fruit and vegetables were shipped to the same area.

In June, the Pan-Presbyterian Council, of which the United Church is a constituent member, elected as its president for the next four years the Rev. Robert Laird, D.D., treasurer of the United Church. After his election Dr. Laird left to visit the extensive foreign mission fields of the church in India, China, Korea, and Japan. The United Church is also a constituent member of the Œcumenical Methodist Conference, holds the same relationship to the International Congregational Council, and is an associate member of the Federal Council of the Churches of Christ in America. (G. A. Si.)

UNITED KINGDOM: *see* Great Britain and Northern Ireland, United Kingdom of.

UNITED PROVINCES OF AGRA AND OUDH.

Formed by the union in 1877 of the former provinces of Agra and Oudh, this is now one of the largest provinces in British India: area 106,248sq.m.; population 48,408,763, of whom 84½ per cent. are Hindus and under 15 per cent. Mohammedans. The province continues 48 civil districts, 36 in Agra and 12 in Oudh. It is a governorship (Sir Harry Haig since 1934), with headquarters at Allahabad (population 183,914) and Lucknow (274,659). There are a number of other important and historic cities: Benares (205,315), Agra (229,764), Cawnpore (243,755), Bareilly (144,031), Meerut (136,709), and Moradabad (110,562) being the largest. There is a High Court at Allahabad and a Chief Court at Lucknow; but otherwise the administration of the two areas has been largely unified. The legislative assembly consists of 228 members, and the second chamber of 59 members. The cabinet (6 ministers, one of whom is a Hindu lady) is of the Congress hue, the premier being Pandit G. B. Pant. Western Hindi is the language everywhere, though there is a great diversity of dialects.

Education is backward: one man out of every 12, and one woman out of every 106, being returned as literate. Much advance has, however, been made of late, especially in university education. Besides the undenominational universities, Aligarh is the site of a great Mohammedan institution, and Benares of a more recent Hindu rival: there are 57 recognized colleges and 23,000 schools, with 1½ million students altogether. Of the total area, 65 per cent. is under cultivation; and a fine system of canals is mainly responsible for about 11 million acres being irrigated. The chief crops are wheat, rice, barley, millets and pulses, oilseeds and cotton, with two others of special importance. Since effective protection was established, the province has become the chief sugar-growing area in India, having 1¾ million acres of cane. It is also the last part of British India where the opium poppy is licensed. There are 22 cotton mills with 9,000 looms, and 4 woollen mills with 25,000 spindles: Cawnpore being the centre of both these industries. Serious labour troubles occurred at Cawnpore during 1937, and the new ministry used all their influence to restore peace.

An even more critical problem continues to threaten the province, in the growing tension between landlords and tenants. Allahabad is the home of the extremist leader, Pandit Jawahir Lal Nehru; and the province has for years been the scene of no-rent campaigns and of promises that better conditions of rental and tenure would be assured to the tenants. The prestige of the great landed proprietors, who were particularly powerful in Oudh, has been sapped, and, from both a financial and a social point of view, the future is not easy to forecast. (ME.)

UNITED STATES OF AMERICA, THE, is situated on the North American continent, between 25° 35′ to 49′ N. lat. and 66° 35′ to 124° 45′ W. long. Its total area is estimated at about 3,026,789sq.m. and its population (U.S. Bureau of the Census 1937) 129,257,000. Below are listed the 48 separate States which are joined together by a Federal Government. There are also non-contiguous territories and possessions with a total area of 711,606sq.m. and a population of 14,233,389 (1930). (*See* ALASKA, HAWAIIAN ISLANDS, PHILIPPINE ISLANDS, PORTO RICO, GUAM, VIRGIN ISLANDS, etc.)

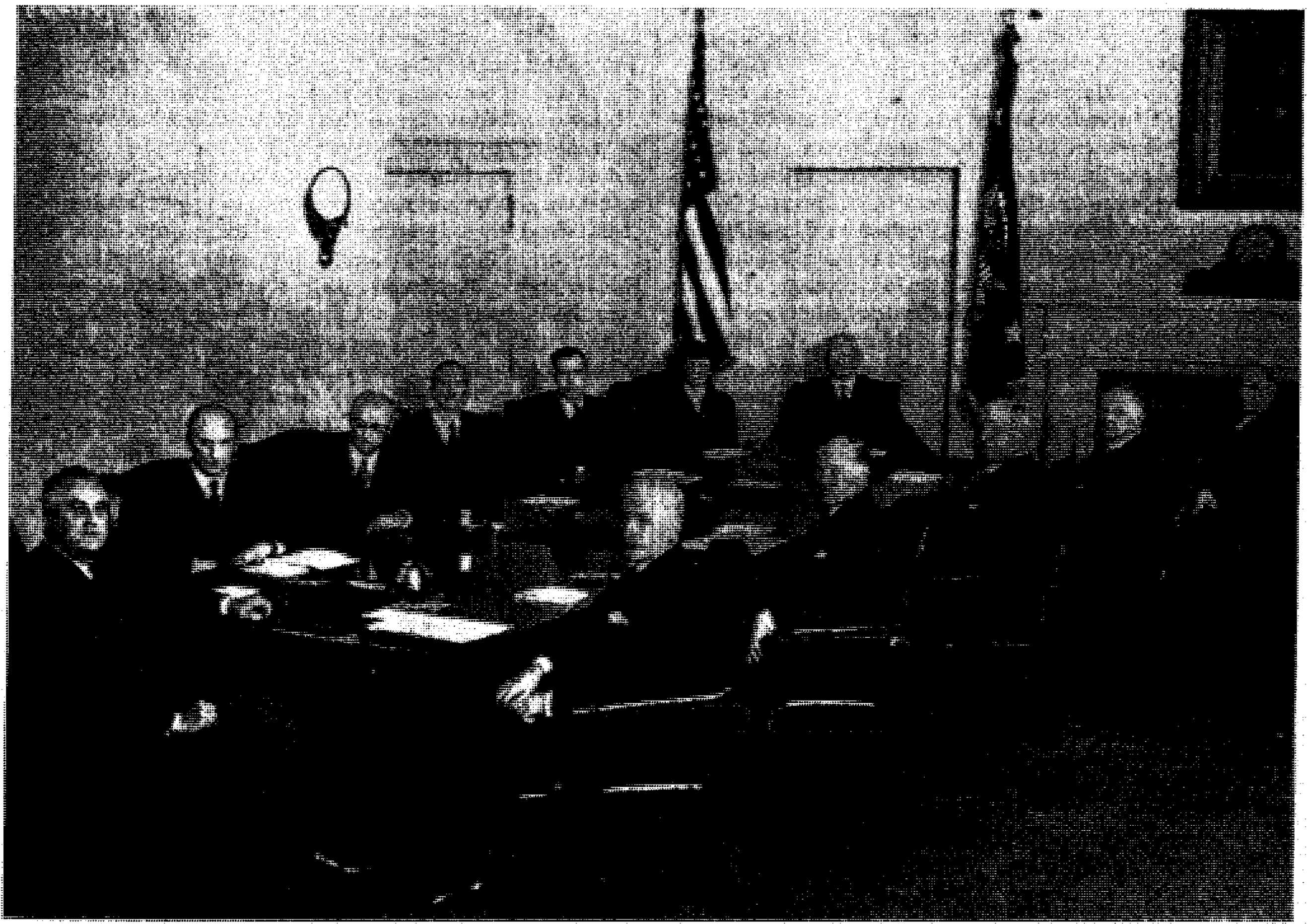
Capital, Washington, D.C.; President, Franklin D. Roosevelt (*q.v.*); Vice-President, John Nance Garner. The national flag is 13 horizontal stripes, alternate red and white, with 48 stars, white in a blue field. Cities with over 700,000 population (1937 estimate) are New York City (7,428,135); Chicago (3,632,701); Philadelphia (2,431,264); Detroit (1,787,040); Los Angeles (1,489,238); Cleveland (939,771); St. Louis (840,954); Baltimore (831,858); Boston (792,630); Pittsburgh (700,760).

State	Area sq.m.	Capital	Population
Alabama	52,250	Montgomery	2,895,000 *
Arizona	113,956	Phœnix	435,573 †
Arkansas	53,335	Little Rock	1,854,482 †
California	155,652	Sacramento	6,154,000 *
Colorado	103,658	Denver	1,071,000 *
Connecticut	4,820	Hartford	1,766,947 *
Delaware	2,370	Dover	261,000 *
Florida	58,666	Tallahassee	1,670,000 *
Georgia	59,262	Atlanta	3,085,000 *
Idaho	83,880	Boisé	493,000 *
Illinois	56,043	Springfield	7,878,000 *
Indiana	36,045	Indianapolis	3,474,000 *
Iowa	55,586	Des Moines	2,470,939 †
Kansas	81,774	Topeka	1,823,629 *
Kentucky	40,598	Frankfort	2,920,000 *
Louisiana	48,506	Baton Rouge	2,150,000 *
Maine	33,040	Augusta	800,000 *
Maryland	12,300	Annapolis	1,679,000 *
Massachusetts	8,266	Boston	4,426,000 *
Michigan	57,480	Lansing	4,842,325 †
Minnesota	84,682	St. Paul	2,652,000 *
Mississippi	46,810	Jackson	2,023,000 *
Missouri	69,420	Jefferson City	3,909,000 †
Montana	146,572	Helena	539,000 *
Nebraska	76,808	Lincoln	1,364,000 *
Nevada	110,690	Carson City	101,000 *
New Hampshire	9,282	Concord	510,000 *
New Jersey	8,224	Trenton	4,343,000 *
New Mexico	122,634	Santa Fé	422,000 *
New York	47,654	Albany	12,588,066 †
North Carolina	52,286	Raleigh	3,492,000 *
North Dakota	70,837	Bismarck	706,000 *
Ohio	41,040	Columbus	6,733,000 *
Oklahoma	70,057	Oklahoma City	2,548,000 *
Oregon	95,607	Salem	1,017,000 †
Pennsylvania	44,832	Harrisburg	9,631,350 †
Rhode Island	1,248	Providence	680,712 *
South Carolina	30,989	Columbia	1,875,000 *
South Dakota	77,615	Pierre	692,000 *
Tennessee	42,022	Nashville	2,893,000 *
Texas	265,896	Austin	6,172,000 *
Utah	84,990	Salt Lake City	520,000 *
Vermont	9,564	Montpelier	359,611 †
Virginia	42,627	Richmond	2,706,000 *
Washington	66,836	Olympia	1,658,000 *
West Virginia	24,170	Charleston	1,865,000 *
Wisconsin	56,066	Madison	2,939,006 †
Wyoming	97,548	Cheyenne	235,000 *

* Estimated population for 1937. † Census, 1930.

History.—Following the emphatic endorsement of the first Roosevelt administration by the people of the United States at the polls on Nov. 3, 1936, the first session of the 75th Congress met on Jan. 5, 1937. The senate contained scarcely a dozen determined opponents of the administration, for, in addition to the 76 Democratic members (some of whom had to find seats on the Republican side of the chamber), there were several nominal republicans, like Norris of Nebraska, Nye of North Dakota, and Johnson of California, who generally supported the measures of the New Deal. In the House the Democrats, with 334 seats out of 435, had the largest majority that any party had commanded since 1855. William Bankhead of Alabama was elected speaker of the House, with Samuel Rayburn of Tennessee as floor leader. Joseph T. Robinson of Arkansas continued as leader of the senate till his death on July 14, when he was succeeded by Alben Barkley of Kentucky. What attitude the president, invested anew with a tremendous grant of power, would take towards the pressing problems of the day was a matter of considerable speculation. He had not always been consistent (and, indeed, had not claimed to be) in his policies, though holding firmly to his objectives. For example, in his last speech of the campaign of 1936 he had declared that he 'had just begun to fight' for his comprehensive programme of crop control, conservation, crop insurance, abolition of child labour, slum clearance, shorter hours and higher wages in industry, collective bargaining, cheaper electricity, social security, and a number of other measures. Yet he had intimated at times that the fight was wellnigh won and that the protesting business interests might look forward to a 'breathing spell'. The annual message which the president read to the newly assembled Congress, however, left no doubt that he intended to go on with his fight for social justice. He dealt with a number of dangerous or deplorable conditions confronting the people, such as the lack of proper housing, the prevalence of farm tenancy, continued unemployment, the abuses of monopoly, inadequate wages, and the threat of foreign war; and declared that there must be a strong and alert Government to cope with these problems. 'The most far-reaching and most inclusive problem of all', he said, 'is that of unemployment and the lack of economic balance, of which unemployment is at once the result and the symptom.' While business recovery had mitigated the distressing situation of 1932 and 1933, still, with some 8 million willing workers out of a job, the Government could not be justified in 'placing the unemployment problem in a filing cabinet of unfinished business'. Nearly half the American people were unable to maintain themselves in health and comfort because of inadequate incomes, while we had 'ample resources in the country'. The aim of government should be so to distribute the product of industry that 'all willing and competent persons will be able to live comfortably'.

Congress.—The results of the more than seven months of debate in the Congress, which sat from Jan. 5 to Aug. 21, were so disappointing as to elicit from many critics the reproach that it was a 'do-nothing' Congress. The meagre accomplishments of the session were due partly to a split in the unwieldy Democratic majority between those who supported the president's go-ahead policy and those more conservative members who believed that the time had come to call a halt in the New Deal programme; and partly to a bitter struggle over an unexpected bill which the president sent to Congress on Feb. 5, calling for a drastic reorganization of the Supreme Court and the inferior Federal courts (*see* SUPREME COURT). In spite of the fact, however, that the major proposals of the president were either defeated, like the Supreme Court bill, or ignored, like the plan for the reorganization of the executive departments, the establishment of six regional power systems on the model of the Tennessee Valley Authority, and legislation for crop control; or left hanging in the air like the bill to regulate hours and wages, the confused and contentious session may be credited with some positive results. A Neutrality Act (see below, under *Foreign Affairs*), signed May 1, provided for the procedure and the machinery which it was hoped would keep the United States out of war. The Guffey-Vinson Coal Act, approved on April 26, replacing the Guffey Coal



Wide World Photos]

PRESIDENT ROOSEVELT WITH MEMBERS OF HIS CABINET IN THE CABINET ROOM AT THE WHITE HOUSE, WASHINGTON. ON THE PRESIDENT'S LEFT IS MR. MORGENTHAU, SECRETARY TO THE TREASURY, AND ON THE PRESIDENT'S RIGHT IS MR. CORDELL HULL, THE SECRETARY OF STATE

Control Act which had been declared invalid by the Supreme Court a year before on account of its wage clauses, regulated the production of bituminous coal entering into interstate commerce, thus salvaging to a great degree the principle of the ' little N.R.A.'. A beginning at least was made in the relief of the farmer tenants (who comprise more than 40 per cent. of the farmers of the country) by the passage and approval in July of the (Bankhead) Farm Tenancy Act, which provides for a Federal loan of $10 millions for the first year, $25 millions for the second, and $50 millions for each succeeding year, to enable farmers to buy their land. The loans are to be administered through the Farmers' Home Corporation (superseding the Tugwell Resettlement Administration) and are to run for 40 years with interest at 3 per cent. At the same time, Congress overrode the president's veto of an act extending the 3½ per cent. and 4 per cent. interest rate on the old loans of the Federal land banks. It is true that the relatively small appropriations of the Farm Tenancy Act will make it possible for only a very tiny percentage of the 3 million tenants in the country to buy their own farms ; but it is at least a gesture in the right direction.

Another important relief measure which occupied the attention of Congress was Federal aid in providing decent homes for the 75 per cent. of American families whose income is less than $2,000 a year (*see* HOUSING). Owing to the depression and to the high prices of material and labour that followed, there was an alarming shortage of houses and apartments for rental at the cost of not more than $6 a week, and a consequent alarming growth of the slum population, with all its evil effects on the health and morals of the community. Bills sponsored by Senator Wagner of New York and Representative Steagall of Alabama resulted in the Housing Authority Act (signed by the president on September 2), by which the Federal Government was empowered to loan to States, counties, or cities $100 millions the first year and $200 millions in each of the two following years for the construction of low-rent houses and apartments. Cash subsidies, limited to $20 millions a year, were to be granted to the owners of such buildings to compensate them for losses on the low rentals ; but the grants were available only in case the new building replaced a slum dwelling. It was realized that the Housing Act would not provide for more than about 350,000 units in three years, whereas millions of low-rent homes were needed. The president, in fact, in a special message to the extra session of Congress (Nov. 29), called for a $16,000-millions drive by private interests to build the 3 million low-rental houses needed to bring living standards up to the level of 1930 ; and at the same time suggested changes in the Housing Act for the reduction of interest rates on the F.H.A. loans. New Wagner-Steagall housing bills were passed by both Houses in December, just before the adjournment of the extra session, and, as the year closed, they were awaiting final formulation by a conference committee.

In addition to the measures noted above, the first session of the 75th Congress made provision for the continuance of the C.C.C. (Civilian Conservation Corps) and the reciprocity pacts negotiated by Secretary Hull, and appropriated the $1,500 millions asked for by the president for relief. A Railroad Retirement Act extended the social security system to about 1,500,000 railway employees. A Sugar Act empowered the secretary of agriculture to limit imports of sugar from foreign countries and from Hawaii and Porto Rico. And beneficent reforms were made in the Federal courts to expedite procedure and to curb the issue of injunctions.

Recession, 1937.—The failure of Congress to legislate on crop control in wheat, cotton, corn, tobacco, and rice, to tackle the problem of the revision of the anti-trust laws, to provide for the reorganization of the executive department, to set up six new regional planning systems like the T.V.A., or to produce a wages and hours bill for industry, led the president to call an extra session of Congress on Nov. 15. In the interval between the two sessions, a severe ' recession ', which seemed to many to presage a major depression, had set in. Business activity declined from a high index number of 111·2 on Aug. 14 to 88·9 on Nov. 20. Steel production fell from over 80 to 31. The stock market entered on a tail-spin which sent the average of 50 issues down from 135·5 to 82. In every branch of heavy industry there was more or less stagnation, in the face of urgent need for expansion. The $12,000 millions utilities interests, for example, required an expenditure of more than $1,000 millions, for construction work in 1938. The president, in his message of Nov. 15, spoke of the ' marked recession in industrial production and purchases ', and asked the co-operation of business, ' not only to produce goods for the nation's market, but to furnish markets for the nation's goods '. Concentration on the president's programme for the extra session, however, was largely thwarted by the bitter controversy which arose over the causes and the cure of the recession. On the one hand, it was urged that the rapidly sinking curve of production and capital values was due to the fear injected into business by unsound taxes, such as those on undistributed corporation earnings and on capital gains, and by excessive Government regulation. The champions of the administration, on the other hand, charged the ' economic royalists ' with staging a deliberate sit-down strike in order to discredit President Roosevelt and of ' raiding ' the stock market for political ends. The way out of the recession, said some, was to support the president as heartily as he had been supported in 1933 ; while others maintained that deliverance could come only from stern resistance to further Federal regulation of business. With this wrangling over basic policies and with a futile filibuster over the Wagner anti-lynching bill, stirring sectional discord in the senate, it is little wonder that the extra session got off to a bad start. The results of its five weeks' deliberation were scanty. Although farm bills were prepared and the new Wagner-Steagall bills passed in both Houses, and although some progress was made in recasting the Black-Connery wages and hours bill (which had passed the Senate in the summer of 1937), no progress was made in the other items of the president's programme, and no major bill was ready for his signature. It was questionable whether the results of the extra session justified the $220,000 which it cost the taxpayers for mileage allowance.

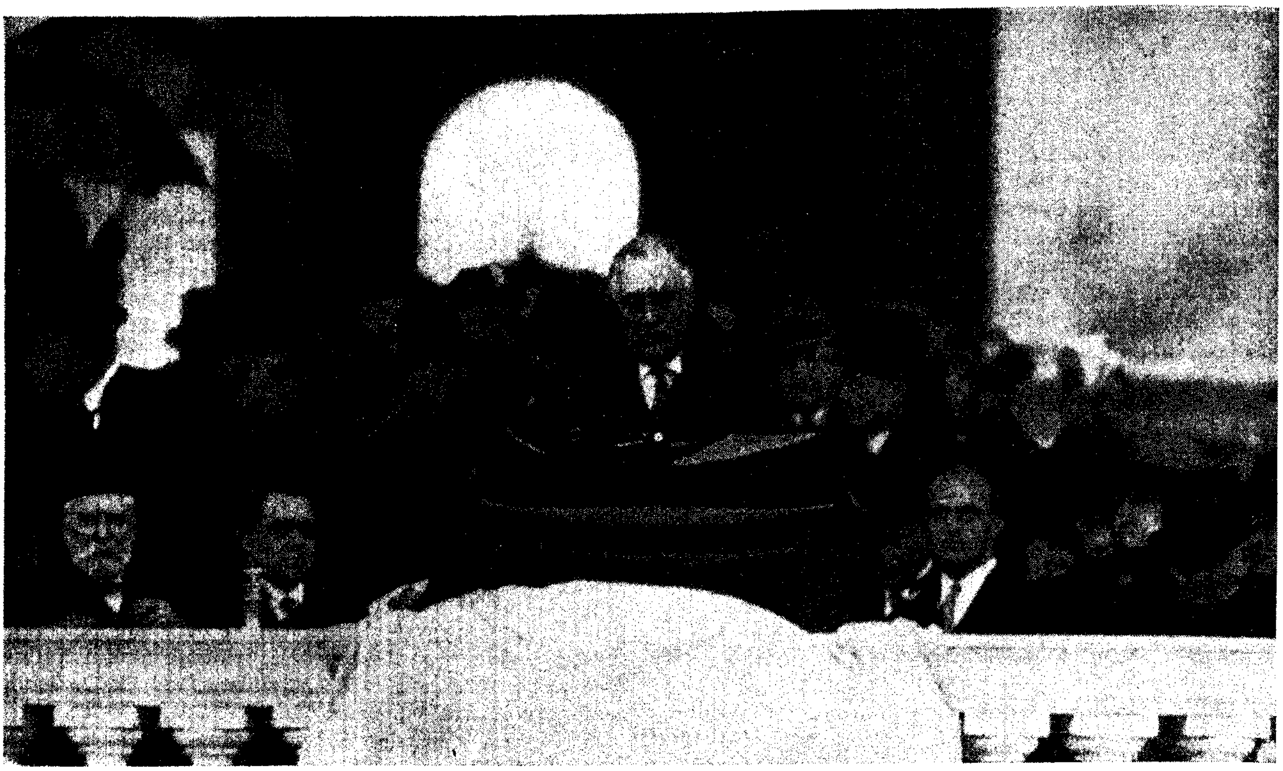
The most obvious fact of the economic history of the United States in the year 1937 was the contrast between the rising curve of prosperity in the first half of the year and the steady recession in industry, capital values, and stock market prices which characterized the second half. Not that there was any such sudden plunge into the abyss of depression as occurred in 1929, when, as a result of the unhealthy ' boom ' conditions of the Coolidge era, there was a surplus of production of durable goods, an excess of corporation borrowing, wild speculation in the stock market, an alarming increase in bank failures, a demoralization of world trade, and a persistent depression of farm prices which made it impossible for the farmer to meet his taxes and interest charges and have any dollars left to purchase the goods turned out by industry. These evils had been remedied to a great extent since 1933. In 1937 there was a shortage in housing and industrial equipment, with ample capital waiting for investment. The banks were in sound condition (*see* BANKING : *United States*). Many abuses in the stock market had been eliminated by the Security Exchange Act (*see* STOCK EXCHANGE), and the investing public, somewhat sobered by their losses in the great crash of 1929, were more wary both of the kind of securities they bought and of the method of trading on margins. Farm income had doubled in the period 1932–37, reaching a total of about $8,500 millions in the latter year, thanks to the benefits distributed to the farmers under the A.A.A. and the Soil Conservation Act ; so that, in spite of further needed farm legislation (being worked out in Congress in early 1938), the farmer has a fair ' cushion ' of funds with which to meet the present ' recession '.

By the midsummer of 1937 the economic balance-sheet presented an encouraging aspect. Taking as a base the figures of 1923–25 (quite prosperous years before the 'boom'), the production index of July 1937 was 114. Two per cent. more people were employed, and the payrolls showed an increase of 1·2 per cent. Although the cost of living rose about 1 per cent. in the 12 months previous to July 1937, it was still considerably lower than it had been a dozen years before, and wages had risen faster than living costs. Foreign trade, which had declined more than 50 per cent. in the depression years, was regaining its normal status, the volume of exports reaching the 1923–25 level and the imports showing an increase of about 13 per cent. Steel production in the first quarter of 1937 ran nearly 600,000 tons ahead of the previous high record of 1929, and the United States Steel Corporation paid off the accumulated dividends of over $18 a share on its preferred stock. The sale of electrical goods reached $2,400 millions, a 15 per cent. advance on 1936. The total dividend disbursement in 1937 was $4,550 millions, the largest since 1930. The national income, which had sunk below $40,000 millions in 1932, had risen to nearly $70,000 millions, and President Roosevelt, in his message to Congress in Jan. 1938, spoke confidently of raising it up to or above the figure of $90,000 millions attained before the depression.

With all these signs of business prosperity at the mid-year, the slump of the autumn and early winter came as a storm out of a fairly clear sky. ' There is no adequate justification ', said Alfred P. Sloan of the General Motors in his New Year's statement, ' for the situation in which we find ourselves '. The explanation generally adopted by the big industrialists like Mr. Sloan is that the recession in business was due to political rather than to purely economic causes. Continued Federal expenditure for relief, public works, agricultural subsidies, housing projects, and so forth, in excess of the Government revenues, had both resulted in national deficits for a number of years and tempted the Government to seek sources of revenue (like the capital gains tax and the undistributed profits tax) which were a burden upon business. Seven years of unbalanced budgets had raised the national debt from $16,185 millions in 1930 to $33,778 millions in 1936, and, in spite of attempts to pare the budget, another $2,993 millions was added to the debt in the calendar year 1937. If Congress in obedience to the president's demands continued its ' extravagance ', confidence in the Government's ability to get ' out of the red ' might be destroyed and a period of inflation might set in which would ruin the creditor classes. President Roosevelt, in his last three annual messages, held out the hope that the budget would be balanced ' next year ' ; but the increased treasury receipts never sufficed for the expenditures. And in Jan. 1938 the president spoke of a budget stabilized at about $7,000 millions—to balance which additional revenues of over $1,000 millions will have to be found (*see* BUDGET : *United States*). Apart from the uncertainty of the tax situation occasioned by the unbalanced budget, big business was apprehensive of the extent to which the Government might go in its policy of regulating wages and hours, of tightening the anti-trust laws, of entering into competition with private industry in the utilities field, or of supporting the aggressive tactics of organized labour and the rulings of the National Labor Relations Board.

How far such apprehensions are a justifiable and honest reason for the sudden slowdown of capital investment and the consequent industrial slump is hard to say. At any rate, the situation gave rise to a bitter controversy. At just the moment when the president was urging co-operation between industry and the Government and inviting representatives of big business to conferences at the White House, the ' rugged individualists ' on the one hand were laying the blame on the dogged folly of the administration, and responsible men in the administration, like Assistant Attorney-General Jackson and Secretary Ickes were accusing the industrial leaders (most of whom belong to the Republican party) of fostering a state of fear in the nation in order to create hostility to the administration—even as the Jacksonites a century ago charged Nicholas Biddle and Henry Clay with engineering a financial panic in order to dish the Democrats. A foreign comment on the economic recession of the latter part of 1937 was of interest. A cable from Paris, Dec. 22, ran : ' The American situation is not considered here as anything analogous to 1929. General opinion is that your depression is temporary . . . especially if Roosevelt refrains from all initiatives susceptible of augmenting the burden on business. Until now the American economic system has been stimulated by Government spending. Henceforth, American capital ought to feed business activity directly, instead of being used for subscription to Government loans.'

Labour.—The contention of capital that the behaviour of organized labour was to a large degree responsible for the recession was based on serious warfare between capital and labour in the early months of the year. The Wagner National Labor Relations Act, passed in July 1935, and upheld by a five to four decision of the Supreme Court on April 12, 1937, had created a board of five members to administer the act. In the 17 months up to the spring of 1937 the National Labor Relations Board handled more than 2,000 labour disputes, involving 750,000 workers, and settled 75 per cent. of the cases peaceably. But towards the close of 1936 two factors entered into the situation, which greatly augmented the friction between labour and capital. First, the veritable flood of dividends disbursed by the corporations, as a result of the improved condition of business and of the desire of capital to escape the new taxes on undistributed profits, convinced labour that it was not getting its fair share of the fruits of reviving prosperity. And second, a new type of labour union had appeared in the field, recalling some of the features of the ' one big union ' idea of the old Knights of Labour and the I.W.W. This was the Committee of Industrial Organization (the C.I.O.), started in Nov. 1935 by the dynamic John L. Lewis, president of the United Mine Workers. Both in structure



Wide World Photos]

PRESIDENT ROOSEVELT DELIVERING HIS SECOND INAUGURAL ADDRESS, JAN. 20, 1937—SEATED (ON LEFT) CHARLES EVAN HUGHES, CHIEF JUSTICE OF THE SUPREME COURT, AND C. E. CROPLEY, CLERK OF THE COURT; (ON RIGHT), JAMES ROOSEVELT, THE PRESIDENT'S SON, AND VICE-PRESIDENT JOHN N. GARNER

and in spirit, the C.I.O. differed from the long-established American Federation of Labor. It advocated the organization of all the workers, skilled and unskilled, in a given industry (the vertical plan) as against the more aristocratic, 'horizontal', craft unions of skilled labour, which composed the A.F. of L.; and it approved drastic and direct action to bring pressure to bear on the employers, in place of the conciliatory conference methods of the older organization. There had been a clash between the A.F. of L. and the C.I.O. in 1936, when 10 unions had been suspended from membership in the Federation for adopting the C.I.O. organization. But it was not till after the re-election of President Roosevelt, to which Mr. Lewis's union had contributed a large sum in the lively hope of favours to come, that the C.I.O. moved simultaneously to its attack on big business (especially the steel and automobile industries) and on the A.F. of L. As its most effective weapon it adopted (from France) the 'sit-down' strike, first applied when 1,000 workers in the Bendix Products Company of South Bend, Ind., quit work on Nov. 17, 1936, but refused to quit the factory to let other workers, strike-breakers or 'scabs', take their place. The next month the workers in the Midlands Steel Products mill at Detroit followed suit, and a wave of sit-down strikes swept over the country (*see* STRIKES AND LOCK-OUTS). In the first week of 1937 there were more than 100 strikes in progress. For the most part the sit-down strikes were conducted without violence, the political authorities, like Governor Murphy of Michigan, refusing to precipitate a conflict by calling on the militia to evict the strikers, and the latter making a kind of picnic out of their encampment on the employers' property, as they waved to their families from the windows and drew up the baskets of food which their wives and children brought. But occasionally there was serious rioting and even bloodshed. For example, at the Republic Steel Works, near Chicago, fighting on May 30 resulted in the deaths of 10 strikers and the injury of 100 strikers and 28 policemen. The C.I.O., in spite of the fact that it was obviously using force to drive the workers into its unions, grew by leaps and bounds, until it claimed by midsummer to have drawn away a full half of the membership of the A.F. of L. Realizing that the split between the two great labour organizations was hurting the cause, their heads, William Green and John L. Lewis, met in a number of conferences from October to December to try to reach a working agreement. But as each side was adamant in its demand to represent the labour movement and to reduce the other side to a position of tolerated, if not obedient, dissent, nothing came of the conferences.

Apart from the purely economic struggle of labour with capital and the Green-Lewis fight within the ranks of organized labour itself, which are treated elsewhere in this volume (*see* TRADE UNIONS and ARBITRATION, INDUSTRIAL), the politico-legal aspect of the labour question assumed unusual importance in the year 1937. What was the proper attitude for the political authorities, from the president down to the mayors and the sheriffs, to take in the struggle? Were the sit-down strikers guilty of trespass in occupying the property of the employers after laying down their tools? Was the National Labor Relations Board a fair and efficient tribunal in the disputes between capital and labour? President Roosevelt, whose example naturally influenced the lesser officials, refused to intervene to bring the executives of the General Motors Company or the Republic Steel Company to an agreement with Mr. Lewis, as the first Roosevelt had intervened to call a conference between the coal operators and Mr. Lewis's predecessor as president of the United Mine Workers, John Mitchell. Nominally impartial, the president leaned to the side of labour, characterizing as 'unfortunate' the reply of Alfred P.

Sloan of General Motors to the demands of Lewis, and having ' a pleasant talk ' with the latter, his good friend, at the White House, on Sept. 15. Indeed, Mr. Lewis went so far as to remind the president that he owed his election to labour (an indefensible assertion) and to warn him that there would be a bolt from the Democratic party if he did not support the C.I.O. This was too much even from a good friend, and in his Labor Day address of Sept. 4 (the day after the ' warning ') the president charged both sides with having committed mistakes and showed his annoyance at the long-continued feud of Capulet capital and Montague labour by invoking ' a plague on both your houses '. As the recession grew worse in the autumn and early winter, the president adopted a more conciliatory attitude towards capital, calling several of the leaders of industry to the White House for consultation on the ways and means of halting the slump.

The secretary of labour, Miss Perkins, at first seemed to favour the sit-down strike, declaring that its legality ' had not yet been determined ', but later she changed her view, perhaps in deference to public opinion, which, if we may trust the poll conducted by the magazine *Fortune*, condemned this policy of compulsion used by the C.I.O. Of the four classes of people polled—executives, salaried employees, factory workers, and the unemployed—the percentage of those who voted in favour of keeping the plant open for non-strikers was larger than that of those who voted that the plant should be closed. The opinion of the unemployed, who were looking for a job, may not be surprising, and, naturally, the executives and the salaried force would vote against the sit-down ; but that 39·7 per cent. of the factory workers themselves pronounced in favour of keeping the plants open, as against 36·8 per cent. who voted for closing them, was highly significant. It meant, as *Fortune* commented, that ' American labour attaches too much value to a job, and too little to a union, to be really ripe for strong and sustained union militancy '. Even in the month of Jan. 1937, when the ' militant ' union policy of the C.I.O. was just getting under way, a poll of the American Institute of Public Opinion showed 53 per cent. in sympathy with the companies to 47 per cent. in favour of the strikers. In these figures, perhaps, we may see why the sit-down strikes, after some apparent success in the early spring, died down by summer, and the C.I.O. became more amenable to the conference method of settling labour disputes. It is significant that in the same poll taken by *Fortune*, executives and factory workers agreed by almost the same figures (48·6 per cent. and 48·3 per cent.) that the best way of settling such disputes was by a committee of employers and employees. Less than one-half as large a vote was cast for intervention by the Federal Government.

In view of the absorbing interest in Federal mediation in labour troubles and the elaborate machinery set up for its use, and in view of Mr. Lewis's rather threatening gestures to coerce the administration into active support of the C.I.O., it is to be noted that only 28·2 per cent. of the factory workers who voted favoured Government intervention. Such intervention has been chiefly exercised through the Wagner National Labor Relations Board (the N.L.R.B.), which, since its successful operations in the spring of 1937, has tended to become more itself a subject of controversy than a composer of controversies. Capital accuses the board of manifesting a strong C.I.O. bias, and labour complains that it exceeds its delegated power in interfering with wages and hours. Both sides have charged it with arbitrary and unfair rulings and both have attempted to dictate to the board as to how the elections were to be held for the determination of whether the workers should be organized under the A.F. of L. or the C.I.O. Typical of the activities of the N.L.R.B. was its indictment of the managers of the Ford motor plant at Buffalo, on Dec. 23, for violation of the Wagner Act, and its order to the company to cease and desist from interference with the organization of the workers. The company filed a rejoinder, characterizing the charges as ' absolutely untrue ', and prepared to fight the case in court.

Altogether, the record of the year 1937 in labour relations was far from encouraging. In the first five months of the year more than 2,000 strikes (more than the total number in 1936) were recorded by the Bureau of Labour Statistics, involving 965,000 workers. The bitter quarrel between the C.I.O. and the A.F. of L. filled the entire year. The Black-Connery Labor Standards (wages and hours) bill proved to be a subject of controversy rather than a solution of the problem. Though passed by the Senate in midsummer, it failed of approval in the House, and it was not until December that a petition signed by the necessary majority of 218 members was secured to compel the Rules Committee to bring the bill to the floor, where its fate still remained uncertain in Jan. 1938. It was hoped that the creation of the N.L.R.B. would do for industry what the Railway Labor Board of 1926 had done in averting a major strike on the railroads ; but, as has been stated, the N.L.R.B. failed to satisfy either the employers or the workers. The lesson of 1937 would seem to be that less reliance should be placed on governmental machinery and more on the conference method in securing such measure of peace and harmony as is possible in the field of labour.

Transport.—Fairly substantial progress was made by the railroads in 1937, though they had not yet recovered from the inroads made on their business by the competition of bus, truck, and aeroplane. By improving the comforts of travel and the speed of their air-conditioned streamline trains, the railroads attracted a monthly average of over 20 million passengers, excluding commuters, in 1937 ; and with their light but strong steel cars and their Diesel-powered low-fuelled locomotives were able to carry passengers profitably at the rate of less than two cents a mile prescribed by the Interstate Commerce Commission. The report of the president's National Resources Committee, completed in July, stated that ' the producer, the manufacturer, the merchant, the public utility, and the individual are getting a freight service (as well as a passenger service) measured in hours instead of days, and in days instead of weeks, even as compared with 15 or 20 years ago '. Naturally, as the speed, the efficiency, the economy, and the comfort of railroad travel increase, the demand for railway service grows. And while buses and trucks may cut into the short-haul business of the railroads, and aeroplanes may transport more of the lighter and more valuable freight and the passengers who are willing to pay for very rapid transport, there can be little doubt that the vast railway system of the country, whose reproduction value was estimated by the Interstate Commerce Commission at the close of 1937 at $26,238,857,000, will continue to be the main agency of continental travel and commerce. As stated above, the railroads have had no serious strikes since the operation of the Railway Labor Board of 1926. However, there was a constant pressure put upon them by the railroad brotherhoods for an increase in wages, and a counter-demand on the Interstate Commerce Commission by the railroads for increased rates. On Aug. 25 the refusal of the railroads to grant a 20 per cent. rise in wages threatened a strike of 250,000 workers; but the Federal mediator at Chicago was able to avert a break. On Oct. 22 the Interstate Commerce Commission granted a freight rate increase of $47,500,000 to the class I roads, and the next month (Nov. 29) hearings were begun before the Interstate Commerce Commission on an appeal of the railroads for a $500 millions rise in freight rates to offset the improved equipment and the increased operating cost of the roads. The railroad managers also declared that the increase of rates asked for would enable them to spend $900 millions on needed new equipment. Though granting an increase in passenger rates to the lines west of the Mississippi, the Interstate Commerce Commission, on Dec. 10, declined to sanction a general rise; but a week later the commission relented so far as to grant an increase in freight rates estimated to yield $20 millions annually. Meanwhile, the railways secured lower coal prices and a pledge from Chairman Jesse Jones of the R.F.C. to loan them funds for their operating expenses. (*See* RAILWAYS: *United States.*)

Merchant Marine.—Considerable progress was made in 1937 in the development of a worthy merchant marine. Though the United States ranked only below Great Britain, Germany, and Japan in the number of merchant ships, the great majority of the vessels were employed in coast-wise and inland waterways traffic. Only 374 merchant ships were in overseas trade. The reasons for this lag in merchant marine were: first, foreign countries could build ships at a cost of 30–40 per cent. less, and, second, the wages of American seamen, since the Furuseth Act of 1915, were much higher than those of foreign seamen. Government subsidies to shipping, therefore, were indispensable for the maintenance of an American merchant marine. The Merchant Marine Act of the summer of 1936 created a Maritime Commission, of which Joseph P. Kennedy, formerly chairman of the Securities Exchange Commission and later ambassador to Great Britain, was made chairman. On Nov. 9, Mr. Kennedy made a special report to Congress, advising a liberal increase in shipping subsidies and aid in shipbuilding up to $250 millions, to revive 'a very sick industry', and on Nov. 30 the indefatigable chairman summoned a delegation of over 20 merchants to Washington, to plan service on 23 basic overseas trade-routes. On Oct. 22, the Commission contracted for the building of a $15,750,000 ocean liner to replace the 'Leviathan', which had been taken over from the Germans at the time of the war, and which, after being tied up at her dock in Hoboken for several years, was sold (Dec. 10) to British firms to be scrapped. The Maritime Commission also asked for loans to build flying boats and for Federal supervision of ocean air travel.

Aviation.—The record made in aviation during the year 1937, both in the Government service and in private passenger and commercial lines, was striking. According to the report of General Westover, chief of the United States air corps, more than 400 fighting planes of the last word in equipment, speed, and safety devices (such as the automatic landing control) were added to the army air force during the year, in the plan to bring the total number of army planes up to 2,320 by June 1940. The navy programme, as outlined by Rear-Admiral Cook, chief of the bureau of aeronautics, contemplated a force of some 2,000 combat and patrol planes by 1942. During the period from June 1936 to Dec. 1937, over 600 transcontinental and overseas flights of from 2,000 to 3,000m. were made without loss of life. The United States naval air station at Pensacola, Fla., turned out 297 qualified aviators during the fiscal year of 1937. The investment in commercial aviation rose from $30 millions in 1930 to $100 millions in 1937, when there were 78 domestic routes covering 200,000m. a day and served by 2,366 airports. Trans-Pacific mail and passenger service, which had been inaugurated in Nov. 1936 by simultaneous east and west flights of the Philippine Clipper and the China Clipper between California and Manila, was extended to Hongkong on Dec. 1, 1937, and to New Zealand on Dec. 26. Early in July, Pan-American and Imperial Airways began 'pathfinding' flights between Ireland and Newfoundland, with a view to organizing a transatlantic service.

Unfortunately, the aviation record of the year was marred by several accidents, resulting in the loss of over 40 lives. On July 2, the last radio messages from the South Pacific were received from the most famous woman aviator in America, Amelia Earhart, who with her pilot Fred Noonan was making a round-the-world flight. United States warships and planes searched the waters of the Pacific for 10 days without finding a trace of the missing flyers. Eleven persons were drowned when a United Airlines plane fell into San Francisco bay on Feb. 10. On Oct. 18, the passengers and crew, numbering 19 in all, were killed when a magnificent airliner crashed into a peak of the Utah mountains east of Salt Lake City. But the worst air tragedy of the year occurred at Lakehurst, N.J., when the great German dirigible *Hindenburg* burst into flames just as she was approaching her mooring-post in the early evening of May 6 and crashed to the ground, carrying 36 persons to death in the burning wreckage.

Social Security and Relief.—When President Roosevelt signed the Social Security Act on Aug. 14, 1935, he declared that it was the most important measure of his administration. That act, still a subject for revision, extension, and lively discussion, was significant in that it marked for the first time the Federal Government's acknowledgment of a responsibility for the welfare of the aged, the crippled, the blind, dependent mothers and children, the jobless, and workers who worried over losing their jobs or over what would befall them when their days of usefulness were past. It was a complete reversal of the dictum of President Cleveland that it was the duty of the people to support the Government, but not of the Government to support the people. Except for certain direct grants to the blind, the crippled, and destitute mothers and children, the act made Federal aid contingent upon the legislation of the States, with the provision that such legislation must be approved by the National Social Security Board. To tide the workers over periods of sickness or forced unemployment, a tax of 1 per cent. for 1936, 2 per cent. for 1937, and 3 per cent. for each succeeding year was levied on the payrolls of every employer of more than eight workers (except in agriculture, domestic service, and a few other exempt classes). In addition, the act contained provisions for old age pensions for the needy and a scheme of old age insurance for workers generally. To the latter scheme both workers and employers were to contribute in equal shares: namely, 1 per cent. of the worker's wages for the years 1937–39, with a graduated increase up to 3 per cent. for the years 1949 and following. It was estimated that by 1980 the receipts from these assessments would reach the huge figure of $47,000 millions. Already by the end of Sept. 1937, the fund in the treasury amounted to $448,500,000. During the first year of the operation of the Social Security Act, 36 of the 48 States adopted the old age pension system, and a dozen States had passed laws enabling them to participate in the old age and unemployment insurance benefits. In the single month of Dec. 1936, no fewer than 19 States were added to the list, and the year 1937 saw the remaining 12 States and two territories within the jurisdiction covered by the Social Security Act pass legislation for unemployment compensation. Only Virginia at the close of the year remained without an old age insurance law. On May 27 the Supreme Court, by a vote of five to four, upheld the unemployment insurance and old age pensions clauses of the Social Security Act. The Child Labor amendment to the Constitution, which had been pending since 1924, was approved in 1937 by the legislatures of Kansas and Kentucky, bringing the total number of ratifications up to 28—only eight short of the necessary three-fourths of the States. (*See* also SOCIAL SECURITY and RELIEF.)

The year also saw the first attempt of the Government to make an accurate census of the unemployed, when President Roosevelt, on Aug. 30, signed a bill for such a census to be taken through the post office machinery, and allotted $5 millions of relief funds to administrator John D. Biggers for the job. The census, taken in November, registered 7,822,912 names, but Mr. Biggers believed that not more than 70 per cent. of the unemployed had actually registered, and he consequently estimated the number of idle at approximately 10 millions, or about one-fifth of the nation's potential workers. That so large a proportion of the normally 'gainfully employed' were still out of work was a sharp reminder that the problem of Federal relief was not, in the president's phrase, 'to be placed in the filing case'.

As has been stated, the president, by dint of insistent pressure, kept Congress from cutting down by a third his demand for a $1,500 millions relief appropriation at the beginning of 1937. President Green of the A.F. of L., stating on April 11 that the unemployed numbered 9,700,000 (an estimate in close accord with Mr. Biggers' census of seven months later), declared that the Government must find work for at least 3 millions of the idle during the ensuing year, and held that the Government aid should be in the form of work on useful projects rather than on the relief-roll basis, 'in order to avoid making permanent paupers out of millions of self-respecting Americans'. The Department of Labor announced that 1,400,000 workers had been added to the payrolls of private industry in 1936 and that W.P.A. (Works Progress Administration) jobs had been curtailed by administrator Hopkins. But when the business recession of 1937 set in, the W.P.A. workers waited on Mr. Hopkins and staged 'job marches' to have their work restored. The president denied their plea for reinstatement (Aug. 24), while granting that there should be an end of relief job cuts. However, on Dec. 9, administrator Hopkins announced an increase of 350,000 W.P.A. workers. The expenditures of the W.P.A. for the first 11 months of the year 1937 amounted to $1,397,380,000. There was a great deal of criticism of the W.P.A on the ground of excessive Federal spending, favouritism in the local allotments of projects, the futility of many of the projects supported, 'dictatorial' power in the hands of Mr. Hopkins, and so forth. Mr. Abraham Epstein, executive secretary of the American Association for Social Security, repeatedly urged that the problem of relief should be intimately related to that of unemployment insurance, so that the needy unemployed should not be 'shifted back and forth from the relief rolls'. Since many now on relief are unwilling to accept temporary jobs for fear that they will not be returned to the relief rolls when the job is over, Mr. Epstein advocated giving immediate and equal insurance benefits to all who are unable to find work 'from the first day of their unemployment to the time they find a job'. Thereby, he believed that slackers would be eliminated and the laziness and shiftlessness of uninterested workers on relief would be done away with. When granted on a dignified and secured basis, he said, relief can be as self-respecting as unemployment insurance. 'Made work' is as

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likely to injure morale as is relief. ' Handling a shovel or compiling meaningless statistics does not add to the dignity and morale of either the skilled worker or the technician.'

Crime.—The year witnessed persistent and on the whole encouraging efforts to deal with an evil which has long been a source of indignant humiliation for every decent American. Murder, homicide, kidnapping, hold-ups, burglary, racketeering, and graft present the nation with a crime bill estimated at $15,000 millions a year. The homicide rate is 20 times as high as that of Great Britain, and criminal law is so badly enforced that only a tiny percentage of the offenders are caught, convicted, and condignly punished. There are 3,500,000 known criminals at large in the United States (many of them thanks to the laxity of the parole system), and the chances are far more than even that every American citizen at some time or other in his life will become a victim to some form or other of organized crime. For the year 1937, J. Edgar Hoover, chief of the Federal Bureau of Investigation (the ' G men '), reported progress in ridding the country of gangster bands and capturing a number of desperate public enemies. Police training schools were increased and more than 90 per cent. of the criminals investigated by his bureau were convicted. Facilities for the detection of criminals were extended by the identification division of the Federal Bureau of Investigation, until it had nearly 8 million finger-print cards on file.

A scientific and humanitarian approach to the crime problem is tending to displace the purely punitive attitude. Recognizing how deeply the roots of crime are sunk in poverty, idleness, slum dwellings, and lack of education, public and private agencies were at work to improve the material and moral conditions under which the next generation will grow up. The provisions of the Social Security legislation and the housing programme are cases in point. For example, in 1937 the Government completed the model co-operative town of Greenbelt, seven miles from Washington, which will house 885 families at rentals as low as $18 a month. The project, which cost the Government $14 millions and employed nearly 10,000 W.P.A. workers, is expected to yield $425,000 a year in rents, of which $60,000 will be profits. Since the tenants will represent families in the income groups of $1,000–$2,000 a year, Greenbelt and similar projects will not take care of the slum dwellers; but such projects point the way to the cheaper mass construction of decent homes which promises, in conjunction with the drives for higher wages to the labouring class, to remedy the slum dangers of bad health and morals that contribute so heavily to the budget of crime in the United States. (*See* also CRIME and FEDERAL BUREAU OF INVESTIGATION.)

Socialized Medicine was a subject of much discussion during the year 1937. In April, a pamphlet entitled *Doctors, Dollars, and Disease,* published by the Public Affairs Committee of Washington, brought a number of disturbing facts to the attention of the people. Americans were paying out more than $350 millions a year for patent medicines of doubtful value, and another $125 millions to quack doctors and fake healers. The high cost of proper medical care prevented the ' middle class ' from getting its adequate share of attention, while the well-to-do and the poor (through charity) fared much better. For example, families with less than $2,000 income averaged only two calls from physicians a year, as against five for families of the $10,000 class and over. About half the doctors' fees were paid by 10 per cent. of the families. To span the gulf between the millions of people who are in sore need of medical care and the thousands of doctors who are available to render them service, a Government-sponsored health insurance programme was discussed, a programme somewhat similar to that which has been in efficient operation in Great Britain for a quarter of a century, and under which all persons earning less than $1,250 a year contribute a small amount (about 10 cents a week) out of their wages, while the employers and the State make up the fund necessary to pay for medical care. More than 18 million persons are thus insured, and are on the ' lists ' of some 16,000 physicians who volunteer to take insurance cases, which net them an average of $2,250 a year. That there are many American doctors who would be glad to receive such an amount in addition to what their private practice brings goes without saying. Various forms of co-operative medical plans are already operating in local communities, in universities and colleges, and in industrial plants. Notable among these are the Ross-Loos clinic of Los Angeles, which provides medical care by its staff of 25 doctors for a subscription of $2 a month, and the Associated Hospital Service of New York city, to which about 250,000 members subscribe the $10 annual fee entitling them to semi-private care, including board and nursing, for a period of three weeks in any one of 197 hospitals. The American Medical Association has generally been opposed to socialized medicine or compulsory health insurance for fear of the introduction of politics into the profession or the lowering of the fees (the doctors being actually at the head of the list in respect to average incomes in the country). But the trend of the whole economic set-up towards the relief of the under-privileged, added to the beginnings which the Government has already made for the care of the sick, the blind, and the disabled in the Social Security legislation, seems to point inevitably to some system of public health insurance. Few people realize the extent to which the Government has broadened its responsibilities in this direction since Congress in 1798 inaugurated the United States Public Health Service by the founding of the Marine hospital to care for its sick and disabled sailors. To-day the Government operates three-fourths of the tuberculosis hospitals, one-third of the general hospitals, and practically all the institutions for the insane of the country. In the control of milk and water supplies, the inspection of food, the examination of eyes, ears, and teeth of school-children, the prevention of epidemics, the provision of parks, playgrounds, swimming-pools, the public authorities are constantly widening their activities. The work of the Children's Bureau under the tireless management of Miss Katharine Lenroot has shown a remarkable record in cutting down the mortality rate of infants and mothers in cases of child-birth during the year.

Education.—Scientific progress and the spread of free education, which are indispensable elements of social well-being in a democracy, have marked 1937. The public school enrolments in the elementary grades reached 23 millions and in the high schools 7 millions, as against 15 millions and 500,000 respectively in the year 1900. At the earlier date, $215 millions was spent for education, a figure which has risen to nearly $3,000 millions. The growth of the junior college, to continue for two years the education of that large proportion of high school graduates who did not wish, or could not afford the time and money, to go on to a four years' college course, was rapid. In 1937 the 538 junior colleges, situated in all but three States of the Union, enrolled 130,000 students. But even more significant than the growth in numbers has been the emphasis upon a curriculum and a method of teaching aimed at producing a different type of student from the fact-stuffed, examination-worried boy and girl. Instead of the older routine which the weak toiled through in fear and the strong in rebellion, both hailing the end of the term as a day of deliverance from prison, the school now provides companionship, guidance, sympathy, and stimulus. The cultivation of a social conscience, rather than rivalry for individual success, is more and more emphasized as the purpose of education. One must acknowledge also the fine work done in the field of adult education by the W.P.A., whose educational division, operating in all the States of the Union, employs to-day 30,000 teachers of 1,250,000 students. The last census of the United States listed 4,500,000 illiterate adults in the country. This alarming number has already been reduced by 700,000, and the W.P.A. has set a tentative figure of 300,000 more for the coming year. In Feb. 1937 the National Education Association passed a resolution commending the officials of the W.P.A. for ' their foresight in recognizing adult education as an essential factor in national recovery . . . and for their efforts to maintain high standards for the qualifications of teachers '. And in March, the superintendent of schools in Chicago declared that through the W.P.A. programme ' those of us concerned with adult education as a function of Government have obtained a new vision '. This work has not only been fruitful in itself in the past year, but it has stimulated State departments of education, like those in Utah, North Carolina, Louisiana, and Mississippi, to join efforts with the national organization in stamping out illiteracy.

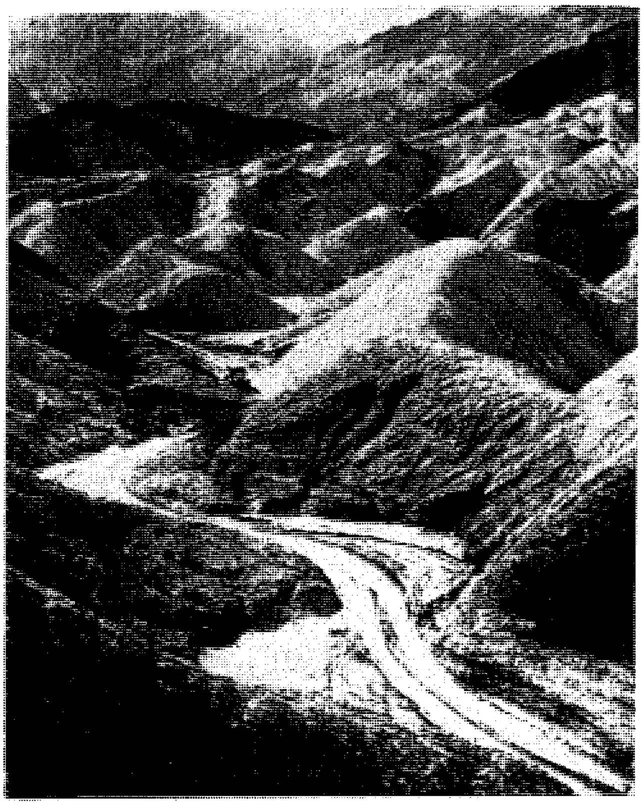
Finally, there were incidents in the year 1937 which made a strong appeal to the generous humanitarian spirit of the nation. Early in the year, terrible floods in the Ohio and Mississippi valleys rendered hundreds of thousands homeless and even threatened the destruction of great cities like Cincinnati and Louisville. Drought and dust storms followed soon after, with disastrous results to live stock and crops in the Middle West. Government agencies and private organizations, like the Red Cross, were quick to come to the relief of the suffering. The most pathetic tragedy of the year was the complete wreckage, on March 18, of a new school building at New London, Texas, through an explosion due to some defect in the gas-steam heating apparatus. Nearly 500 of the 740 pupils between the ages of 7 and 18 were buried beneath the ruins. Two flare-ups in race and sectional prejudice also occurred. The first came in August, when President Roosevelt chose Senator Hugo Black of Alabama to fill the vacancy on the Supreme Court caused by the resignation (June 2) of Justice Van Devanter (*see* BLACK, HUGO LAFAYETTE). The appointment of Black, an ardent New Dealer, was readily ratified by his fellow senators ; but it was soon revealed that Black had joined the Ku Klux Klan many years before, presumably to aid his political fortunes in Alabama. That he had not made this known when his name was under discussion led some of the senators to protest that they would not have voted to confirm him had they known it, and many in the country to protest that he had obtained his high position through ' fraud '. On his return from Europe early in October, he presented his *apologia* to the American people in a radio address, declaring that he had resigned from the Klan in 1922, and that he was opposed to all that it stood for. In spite of a fairly widespread demand that he should decline the appointment, and of petitions to the Court itself to declare him ineligible, Mr. Black was received by his fellow members when he took his seat at the opening of the December turn, and the tempest in the tea-pot died down. The other disturbance was caused by the Wagner-Van Nuys anti-lynching bill, passed by the House on April 15, but held up in the Senate by a ' filibuster ' conducted by Bailey of North Carolina, Connally of Texas, and other senators, who denounced it as an insult to the South and a political manoeuvre to get the negro vote. The filibuster continued (to the detriment of important business) in the extra session of Nov. 15, and was begun again in the regular session of 1938. (*See* LYNCHING.)

Foreign Affairs.—In the relations of the United States with foreign nations, the most absorbing topic of the year was American neutrality : how can America keep out of war and at the same time not sacrifice ' national honour ', wreck foreign trade, nor betray oft-repeated declarations of readiness to co-operate with other nations in securing a more stable and peaceful world ? The failure of attempts to reconcile these conflicting purposes in the period of American ' neutrality ' under the leadership of Woodrow Wilson, added to the realization of the bitter fruits of the World War, the continuance of the mad race in armaments, and the actual military aggression of Italy in Ethiopia and Japan in China, stimulated the determination of Congress and the public to safeguard the neutrality of the United States. As early as Aug. 1935, in view of Mussolini's attack on Ethiopia, a temporary neutrality act (to expire on Feb. 29, 1936) had been passed, forbidding the exports of arms and ammunition to the belligerents, and authorizing the president to close American ports to belligerent ships which would use them as a base, and to proclaim that American citizens travelling in belligerent merchant vessels did so at their own risk. A supplementary act of Feb. 29, 1936, also temporary in character (to expire May 1, 1937), dealt with embargoes, absolute and conditional, again with reference especially to the Italo-Ethiopian conflict.

The definitive neutrality legislation, therefore, was postponed to the spring of 1937. But, meanwhile, Congress at the beginning of its session in January, extended the provisions of the act of 1936 to the factions which were waging civil war in Spain. Three conflicting policies were advocated for neutrality legislation : first, an ' ironclad ', mandatory law of Congress, prescribing exactly what the president must do in the event of the outbreak of a foreign war ; second, a combination of mandatory and ' permissive ' provisions, prohibiting arms traffic, but allowing the president considerable leeway in determining other embargoes and in regulating the travel of American citizens and the movement of American vessels ; and third, leaving it wholly to the discretion of the president and the State department (as was traditional United States policy) to deal with threatening situations as they should arise. From bills sponsored by the chairmen of the committees dealing with foreign affairs in the Senate and the House (Key Pittman of Utah and Samuel D. McReynolds of Tennessee) the final compromise act emerged, and was signed rather reluctantly on May 1 by the president, who objected to the mandatory provisions. The act, in its most important clauses, provided : (1) that on the president's proclamation of the existence of a war between two or more nations (except those in North or South America) it should be prohibited to export arms or to make loans to any of the warring nations ; (2) that the president may by proclamation forbid American citizens to travel on the ships of nations at war ; (3) that he may, at his discretion, forbid American ships to carry goods purchased in the United States by belligerents and require that such belligerents pay cash for the goods before they leave (the famous ' cash and carry ', or ' cash on the barrelhead ', plan) ; (4) that only such credits may be given to nations at war as will enable them to carry on ' normal peacetime commercial transactions ' ; (5) that armed merchantmen as well as war vessels of the belligerents should be excluded from American ports ; and (6) that the president may place an embargo on ' certain other articles ' than arms and ammunition. This law, in spite of the objections of the White House and the State department, puts wide discretionary powers into the hands of the president, the chief of which is that his own proclamation of the existence of a foreign war (which technically is not going on to-day in China, for example) is necessary to set the neutrality act in motion at all. As to whether any neutrality act short of complete isolation can avail to keep the United States out of war, opinion is very much divided. At any rate, complete isolation was repudiated by the president in his Chicago speech of Oct. 5, when he declared that ' the United States must play a part in the concerted effort to preserve international peace ', and that when ' innocent peoples and nations are being cruelly sacrificed to a greed for power and supremacy which is devoid of all sense of justice, the peace-loving nations must make concerted efforts to uphold the laws and principles on which alone peace can rest secure '.

But what about ' concert ' with a ' peace-loving ' nation to which the United States denied the needed access to the sinews of war ? The problem of neutrality is by no means solved by the act of May 1, 1937. Indeed, many believe that that act is more likely to involve the country in war than to keep it out. Another proposed deterrent of war was the resolution of Louis Ludlow, congressman from Indiana, to the effect that, except in case of defence against invasion, war shall be declared only on the vote of the people in a nation-wide referendum. This resolution, introduced in 1935, was buried in committee ; but it was resuscitated in the extra session of Nov. 1937 by Senators La Follette of Wisconsin and Arthur Capper of Kansas, and proposed as an amendment to the Constitution. Since the people fight the wars and suffer from them, it was urged that the people should decide whether wars were to be fought. The proposal was condemned by the president and officialdom generally, on the ground that it would tie the hands of the executive, interfere with diplomatic negotiations, and reveal to foreign nations unfortunate divisions of opinion that were sure to exist. The nation must seem to be united, they argued, in case of a threat of war. Furthermore, it was urged that a vote of the people, excited as they would be by belligerent propaganda in the Press and on the platform, would be even more likely to commit the nation to war than would the diplomacy of the White House and the deliberation of Congress. When the motion to bring the Ludlow-La Follette-Capper resolution before the House soon after the opening of Congress was made in Jan. 1938, it was lost by a vote of 188 to 209. Even should the proposed amendment come before Congress, there is not a chance that two-thirds of the members of both Houses would voluntarily abandon their constitutional right to declare war.

An act of Congress of June, 1934, authorized the State department for three years to conclude reciprocal trade agreements with foreign nations, looking towards the release of world trade from the fetters which high national tariffs, quotas, currency embargoes, and export restrictions had fastened upon it since the World War. On Feb. 25, 1937, Congress renewed the authorization for another period of three years. Up to the end of 1937, Secretary Hull had concluded 16 such agreements, and the most important one of all, that with Great Britain, was nearing completion. The result of the splendid work of Secretary Hull was shown not only in the improvement of trade with those countries which were parties to the agreements, but also in helping the cause of world peace through the substitution of mutually beneficial economic pacts for the jealous rivalry of nationalistic trade barriers, which, in the words of Assistant Secretary of State Sayre, ' forge the thunderbolts of war '.



Fox Photos]

CALIFORNIA. GREEN DEATH VALLEY

United States relations with European nations during 1937 were amicable, despite a few tiffs with the rulers of Nazi Germany, who felt quite free to make the most disparaging remarks about democracies, while resenting as insults any criticisms of the Führer's pretensions and persecutions. Thus, when the mercurial mayor of New York, Fiorello H. La Guardia, suggested that the New York World's Fair of 1939 might include, in a building dedicated to the struggle for religious toleration, a chamber of horrors with a statue of Hitler as exhibit No. 1, the German ambassador at Washington called upon Secretary Hull (March 4) to protest against the insult. The secretary expressed his regret informally, but remarked that he could not interfere with free speech and criticism in the United States. Nor was the interpretation of democracy by the historian Ambassador of the United States to Germany, Professor W. E. Dodd of Chicago, pleasing to the Nazi authorities, though Mr. Dodd refrained carefully from direct criticism of the régime. He resigned on Dec. 7, to be succeeded by Hugh R. Wilson, and on his return to the United States spoke freely of the abuses of the Nazi Government. Again Ambassador Dieckhoff protested, but was told properly that Mr. Dodd, as a private citizen, was free to speak as he pleased.

As to Latin-American relations, the chief business of the year 1937 was the implementing of the resolutions of the fruitful Inter-American Conference for the Maintenance of Peace, which met at Buenos Aires in Dec. 1936. In April, a committee on the Codification of International Law met at the Pan-American Union in Washington to formulate material on arbitration, conciliation, pecuniary claims, the definition of aggression, the application of sanctions, and in general the methods of prevention of war, to be submitted to the eighth Pan-American Conference, to be held at Lima, Peru, in Dec. 1938. Of the 16 commercial agreements negotiated by Secretary Hull, nine have been with the Latin-American countries. On Oct. 21 the United States joined with Costa Rica and Venezuela in mediating a dispute between Honduras and Nicaragua, and on Nov. 15 the president accepted a like invitation to use his good offices in a controversy between Haiti and Santo Domingo ; but he rejected the proposal from Cuba to join the American republics in an attempt to mediate between the factions in the civil war in Spain. A flurry of excitement was caused in Washington early in October, when it was learned that President Getulio Vargas of Brazil, known for his sympathy during his seven years of power with the fascist group, had declared martial law and suspended the constitution. The event was hailed in Germany, Italy, and Japan, all of which countries had numerous settlers in Brazil, as an earnest of the accession of the great South American republic to the fascist bloc. But the new constitution of Brazil, published in November, and containing a long bill of rights, showed that upheaval was more of the factional type of Latin-American ' revolutions ' than any servile copying of the Nazi or fascist régimes. On the assurance to the State department by President Vargas that there was no connexion between his ' reforms ' and the programmes of the European totalitarians, and that the traditional friendship with the United States and respect for democratic institutions would be preserved, President Roosevelt, on Nov. 11, decided on a hands-off policy, for the present at least, in regard to the Brazilian situation.

The only serious crisis in foreign relations for 1937 came near the close of the year. In the mid-summer, the Japanese military authorities (who are not responsible to the Diet) set out in earnest to make a complete conquest of China. Without a declaration of war, and with the pretext of defending their legitimate interests, they ignored their plighted obligation under the Nine Power Treaty of 1922 to respect the integrity and independence of the Celestial Empire, even as they had done in their seizure of Manchuria five years before. Between July 7 and Nov. 9 they subdued five provinces of Northern China, with an area equal to that of France, Germany, and Italy combined, and a population of 80 millions. On Aug. 25 they declared a blockade of the 2,000m. of Chinese coast, and bombarded the native section of the great international city of Shanghai, which they occupied on Nov. 8. A week later they were approaching the capital city, Nanking, from which the Chinese Government fled to a refuge 900m. westward. It was evident by the end of the year that, in spite of overwhelming numbers, the Chinese were unable to halt the advance of the highly trained and modernly equipped Japanese forces. And it was equally evident, from the terms offered to China after the capture of Shanghai, that Japan was determined to reduce her to a vassal State. The United States Government was intent upon defending the lives and property of Americans in China and preserving the rights guaranteed by the open door policy and the Nine Power Treaty. But in spite of warnings from Washington, the work of destruction went on. One American was killed and several were in imminent danger in the bombardment of Shanghai, and on Sept. 22 Secretary Hull wrote a sharp note to Japan protesting against the air-raids on defenceless cities. An advisory group of the League of Nations, backed by the United States, condemned the Japanese invasion of China, and a special conference met at Brussels on Oct. 30, pursuant to article VII of the Nine Power Treaty, to try to bring Japan to heel. But the conference (at which Norman Davis represented the United States) dissolved without accomplishing more than a warning to Japan that her behaviour was inconsistent with the principles of international morality.

Less than three weeks later, an incident occurred which threatened to involve the United States in war with Japan. The United States gunboat *Panay*, while conveying refugees up the Yangtze river, was attacked by Japanese bombing 'planes on Dec. 12 and sunk with the loss of two American lives. While the boat was sinking and the astounded passengers were seeking to reach the shore, they were subjected to machine-gun fire from boats in the river. Three Standard Oil boats were also destroyed and two British river boats were shelled. Prompt demand for apologies, indemnification, and the assurance of the non-repetition of such outrages was made from Washington, President Roosevelt even requesting that the protest be presented to the Japanese Emperor himself, as the only superior power acknowledged by the military. At first the Japanese Government denied that the attack was intentional or that the gunfire had occurred. But when the report of the *Panay's* commander and the naval board of inquiry sitting at Shanghai refuted these contentions, and the United States Government insisted on ' full satisfaction ', Japan sent a new note (Dec. 24), in which she made ample apologies and gave pledges that the attacks would not happen again. The apologies and assurances were accepted at Washington, and the incident was officially closed—not without leaving an aftermath of resentment and suspicion, which was intensified by the exhibition of the ' Sinking of the *Panay* ' films in the movie houses throughout the United States. (*See* also ARMIES OF THE WORLD ; SINO-JAPANESE WAR ; WATER POWER ; ARMAMENTS, WORLD.) (D. S. MU.)

UNIVERSAL LANGUAGE. The character of an artificial language intended to be perfect—lucid, unambiguous, consistent—will differ from one intended merely as an international compromise : the perfect, or philosophical, language would have neither homonyms nor synonyms—nor synonymous, syntactical constructions such as ' after his arrival ', ' after he arrived ' ; the distinction of adjective and noun would disappear : ' huge dog ' being expressed by two nouns in apposition : ' giant dog ' or ' dog giant '. The statement would be reduced to the name of the event or state of affairs, with names in apposition indicating the participants: 'A struck B violently' would appear as '1 Striking 1 past–person–or–thing 1 violent–person–or–thing 1 act of A 1 experience of B' (where ' 1 ' stands for a syllable indicating apposition). Request—including question (request for information)—and exclamation can be similarly reduced.

Considerably more than 200 artificial languages have been devised. The International Auxiliary Language Association is endeavouring to introduce system into the work, so as to bring to an end the haphazard invention—and extinction—of ' inter-languages '. The study of the whole problem has been given the name of Interlinguistics. In recent years, interlinguisticians have been feeling their way to an average, as it were, of existing languages.

Among artificial languages, Esperanto at present holds the field. According to the estimate of its advocates, it has some 500,000 users—or at least adherents; but it is naturally hard to find a reliable basis of calculation.

An extreme form of the view that an artificial language should be a simplification of languages already existing is the suggestion that a simplified form of English should serve as interlanguage. The simplification-suggestions are of two kinds: (1) spelling reform (Anglic); (2) restriction of vocabulary (Basic English).

The chances of success are much debated. Most linguisticians rule them out; but their arguments are not quite incontestable.

The objection that, if an artificial language ever came to life, it would develop irregularities leading to dialectal divergence, seems to be answered by British and American English: so little divergence in four centuries can hardly be regarded as serious.

The objection that the language would be useless for literature because of its lack of associations is a palpable fallacy. For generations we learned Greek myths with Latin names, Jupiter, Venus, Cupid: the associations were attached to these names as truly as if the Greek names had been used. The real (though trifling) difficulty is the opposite: national associations are imported into the artificial words: it is difficult for a French Esperantist to say 'Dankon' without meaning 'Merci'—'No, thank you'.

Be that as it may, language conservatism is so strong that not improbably the interlanguage will be some mother-tongue modified by the cumulative effect of such partial movements as the attempt now being made in Germany to standardize technical terms.

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UNIVERSITIES AND COLLEGES. Universities cannot remain static. They must move with the times, respond to public needs, envisage the future, keep in step with the growth of knowledge, and provide new buildings, modern laboratories, and technical departments, while continuing their day-to-day tasks of training the younger generation and meeting the demands of the research worker for facilities and apparatus. Their progress, therefore, cannot be determined in full measure by the records of their activities during one single year. Their work of to-day is determined by the growth of yesterday, as well as by the conditions under which they came into existence, their past achievements, and the particular purposes which they subserve. While all universities worthy of the name endeavour to provide instruction and facilities for research in the main departments of knowledge, many have established faculties and schools in subjects for the teaching of which their environment suggests their suitability. Thus, in England, speaking in a general sense, the University of Birmingham specializes in mining and coal utilization, the University of Leeds in leather industries and colour chemistry, the University of Manchester in woollen manufacture, the University of Reading in agriculture and dairying, and the University of Sheffield in metallurgy and glass technology. But this increasing measure of specialization cannot proceed far without funds, and the University Grants Committee, in their report for the period 1929–30 to 1934–35, drew the attention of universities to the need 'for the utmost circumspection before new departments are established'. 'A careful survey', they said, 'should be made of the provision already in existence for the subject elsewhere, and this survey should be carried out, not in any spirit of emulation, but with a full appreciation of the truth that all the universities are working in a common cause.'

Apart from the specialized activities of the kind mentioned, the year 1937 witnessed steady developments in the majority of university institutions in Great Britain and Ireland. A brief conspectus of the progress achieved in the universities of the joint constituency, *i.e.* all those in England excluding Oxford, Cambridge, and London (*qq.v.*), affords the best illustration of the wise and active policy which is being pursued by one and all.

At Birmingham, building on the new university site at Edgbaston continued, and it is expected that the new hospitals centre and medical school will be opened in 1938. Work was also proceeding on the Barber Institute of Fine Art. A special course leading to the degree of B.Sc. in coal utilization was instituted, its object being to train young men of sound general education in the processes connected with the treatment of coal, its use, and the economic factors involved in marketing the finished product.

At Bristol, plans for the new dental school were approved, a large number of junior teaching appointments were created, a certificate in applied bacteriology was instituted, and a social survey was made.

The University of Durham was reorganized under its new statutes in two divisions—Durham and Newcastle—under separate administrative heads.

In Leeds, plans for additions to the central block of the university and for the union buildings were approved, a new boathouse was erected, and headquarters were assigned to the O.T.C.

At Liverpool, the Cohen library and the Harding gymnasium were in course of erection, and a board of clinical studies was substituted for the clinical school.

At Manchester, the new library was opened and the appointments board reorganized.

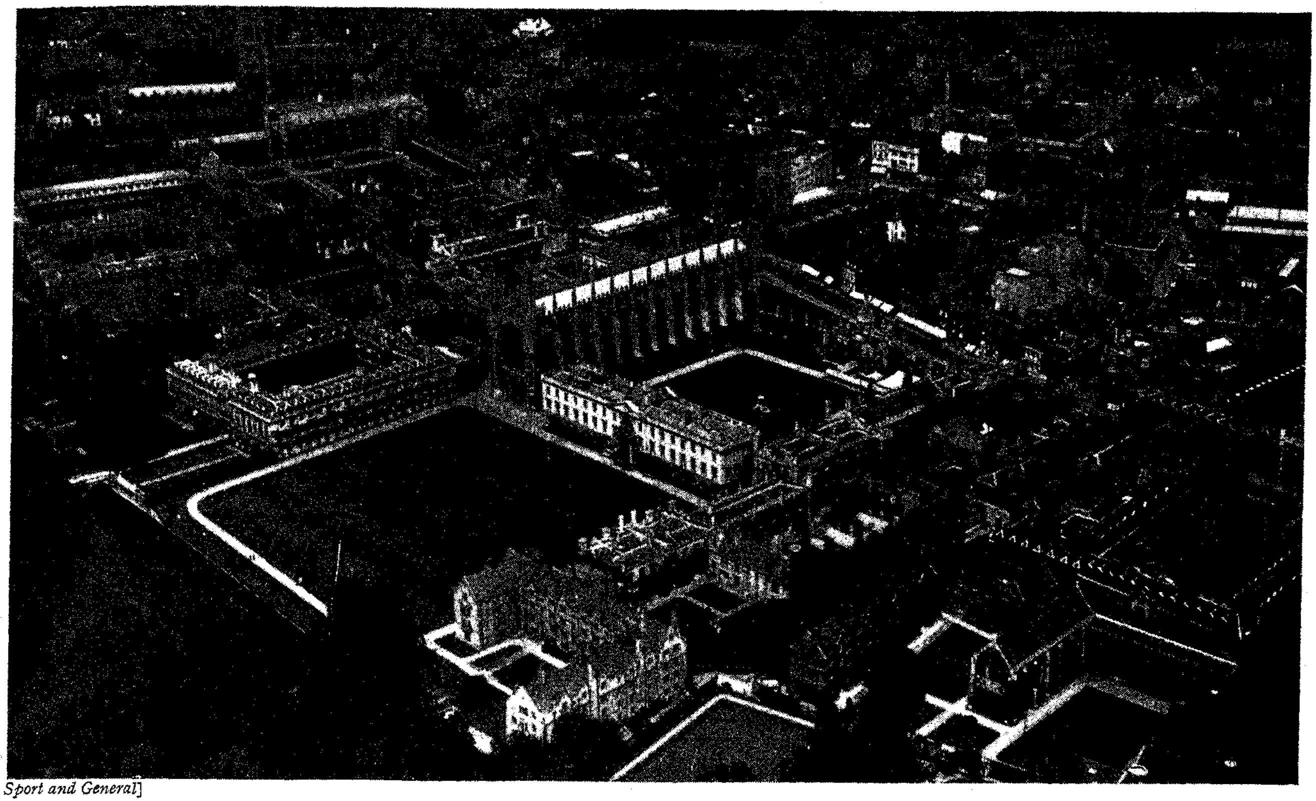
In Reading proposals were under consideration for a new hall of residence for women.

At Sheffield, work was in progress on new buildings for the department of glass technology and on a number of other extensions, and additional ground for athletics has been acquired. Here, as at Leeds, a scheme for the voluntary medical examination of undergraduates was adopted.

Throughout these activities is to be observed an increasing stress being laid upon the welfare of the student—his health, his comfort, and his future. And that this interest is not a question for individual universities but concerns all is made clear by the fact that the Committee of Vice-Chancellors and Principals—an advisory body set up in 1919 on the suggestion of Lord Balfour—had under consideration during the year such subjects as admission of students from foreign countries, exchanges of students, graduate unemployment, health services for students, Higher School Certificate examination, purchase of books by students, recruitment of graduates for local government services, and physical instruction in the universities.

In Wales, no less than in England, the student problem looms large. The appointments board was reconstituted and a permanent secretary was appointed. At Aberystwyth a scheme for new buildings adjacent to the National Library was approved. At University College, Cardiff, extensions to one of the halls of residence are being carried out.

In Scotland, consideration was also being given to the student. In Aberdeen, a new students' union was in



Sport and General]

AERIAL VIEW OF CAMBRIDGE. KING'S COLLEGE CHAPEL IS IN THE CENTRE OF THE PICTURE

process of construction. In Edinburgh (a pioneer of improved physical education through its appointment of Colonel R. B. Campbell as director of that department), a new union and gymnasium at the King's Buildings is being erected. A common room for men and women was opened in the old college. A conference was held with heads of schools on the work of the appointments committee. In Glasgow, work was begun on the new chemistry institute. At St. Andrews (Dundee), a residence for medical students was opened.

In Ireland, at the Queen's University, Belfast, new lectureships in midwifery and gynaecology and an assistantship in economics were created. At Trinity College, Dublin, new courses and new regulations (including residence) were prescribed for a diploma in education. None of the constituent colleges of the National University of Ireland (Dublin, Cork, Galway) reported any new developments.

Canada.—In Canada, although it is reported that institutions of higher education seem to lag behind business in recovering from the depression, most of the universities record progress by no means unimpressive. In Alberta, field crop problems were being investigated; in the University of British Columbia, a department of university extension was organized and work in forestry was extended; at Dalhousie, a physical instructor was appointed; in McGill, a residence for men was provided; in Manitoba, the departments in agriculture were reorganized and a number of new appointments made; in Toronto, preventive medicine is becoming more and more a major subject in the medical curriculum, new courses were provided leading to a B.Sc. in mining geology and for sanitary engineers, graduates in forestry were in increasing demand, and the health services provided were reported to be excellent; while all the other universities report steady, if not spectacular, development.

Australia and New Zealand.—One of the most important events from the point of view of the universities of Australia and New Zealand was the conference held in Feb. 1937. The wide range of interests of these universities is illustrated by the topics discussed—universities and life; problems of the English-speaking university world; residential colleges; student advisers; appointments boards and adult education. The published proceedings of the conference were edited by the librarian of the University of Adelaide.

In Australia, as elsewhere, interest in student life was displayed, by the University of Adelaide, for example, in the erection of the George Murray building for the men's union and the bridging of the Torrens to connect the sports oval with the university grounds, and by the University of Melbourne in the provision of a students' union containing all facilities for staff and students at a cost of £67,000 provided mainly by public subscription, and the creation of a lectureship in physical education. New regulations of the latter university established a degree of Master of Dental Science. In the University of Sydney, a board of studies in divinity was established and by-laws providing for award of degrees of B.D. and D.D. were approved. The University of Queensland was engaged in organizing new faculties.

In New Zealand, neither the University nor the constituent colleges report any developments of outstanding importance, except at the University of Otago, where increasing provision is being made for clinical lecture theatres.

South Africa.—The Carnegie Corporation of New York made a grant of $45,000 to the University of Capetown for research under the auspices of the university into the marine ecology of the South African coast and the growth and storage of deciduous fruit, as well as for making a linguistic, ethnographic, and demographic survey of the Langa native location and a social survey of Capetown. Amongst the new posts created at Capetown is a lectureship in the Bantu languages. A similar appointment was made at Pretoria, and a professorship of Dutch and Afrikaans at Potchefstroom University College of the University of South Africa. New buildings at the University of Pretoria and at Rhodes University College of the University of South Africa were provided for students.

India.—In India many of the universities, as in other countries, partly because of the growth of unemployment and partly through the realization of the necessity for action on their part, began to show an increased interest in student's welfare. In Calcutta, an appointments and information bureau was established. In Madras, proposals for a similar institution were under consideration. In Mysore a post of superintendent of physical education was sanctioned. In Osmania University, hostels for 400 students were provided. In almost all universities changes in regulations and ordinances have been made, tending to higher standards and improved research work. New departments have been created—in Calcutta, a teachers' training department under university supervision; in Benares, glass technology and pharmacy; in Madras, politics and public administration.

Egypt.—In the Egyptian University, Cairo, there has been a steady increase in undergraduate registration.

China.—In China, one of the most interesting developments was the proposal of the University of Yenching to reorganize its teaching arrangements on the lines of the Oxford 'Modern Greats'. Advisers with a knowledge of the Oxford system were appointed with a view to examining how far this scheme could be realized.

Japan.—In Japan, with its five Imperial Universities on the mainland, one in Korea, and one on Formosa, there have been no special developments except at Tohoku University, Sendai, where an institute of agriculture and fisheries has been established with the main purpose of studying the north-eastern agricultural and fishery problems. Experiments are being made into the possibility of substituting barley and wheat for the paddy crops and also of increasing the supplies of fish around this area. During recent years various Japanese professors visited Great Britain and delivered lectures at universities and elsewhere.

Palestine.—At the Hebrew University of Jerusalem, a 'medical centre' was being erected in the vicinity of the university, to consist of a medical school, university hospital, and a nurses' school.

Belgium.—The University of Brussels reports that an institute for the study of aeronautical engineering, an institute of town planning, and an institute of physical education were established. A medical centre of the University on the Congo was created. The scheme for the exchange of Belgian and British professors continued to be a success.

Denmark.—The University of Copenhagen completed its first year under its new constitution of 1936. The Library was preparing to move to a new academic quarter on the outskirts of the city. Aarhus University inaugurated a new institute for biochemistry and physiology.

France.—French universities have little to record in the way of outstanding developments. The number of students declined by over 8,000 since 1934–35. A 'Service Central de la Recherche Scientifique' was established to co-ordinate research work. The retiring age of professors was lowered to 65 years.

Germany.—On June 27 the University of Göttingen celebrated the 200th anniversary of its foundation. Invitations to attend the celebrations were declined by the universities of Oxford, Cambridge, Yale, Princeton, Amsterdam, Leyden, Utrecht, and Groningen, and were accepted with reservations amounting to a refusal by Harvard.

Greece.—In Greece, there were only minor developments; but a closer rapprochement with British culture was provided for by the creation under the aegis of the British Council of the Byron Chair of English Literature and Institutions at the University of Athens.

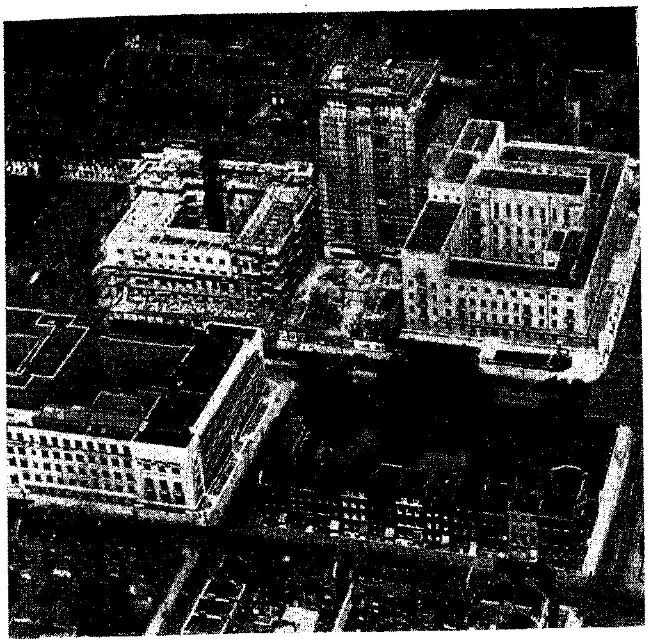
Norway.—At the University of Oslo, funds were provided for a new institute of bacteriology.

Poland.—In Poland, where there are now 16 institutions of higher education, with 40,000 students, the most important development was the Act of July 2, 1937, whereby chairs can no longer be abolished by the minister of public instruction without the consent of the Board of the Faculty, the power of the senate has been increased, the duties of the Boards of the Faculties were defined, the academic year was fixed at not less than 30 weeks, individual tuition has to be given as well as lectures and seminars, and power was given to institute degrees lower than the Doctorate.

Portugal.—The University of Coimbra celebrated the 400th anniversary of its final establishment. A centre of Brazilian studies was inaugurated. The faculty of engineering of the University of Oporto was installed in a new and fully equipped building, and its former premises were absorbed by the faculty of science. In the University of Lisbon, the faculty of medicine added new laboratories and the new Higher Technical Institute building was equipped at a cost of £250,000. A national station of agronomy was established.

Russia.—In Russia, one of the most important features was the fixing of the salaries of the teaching and the administrative staffs of universities and of the grants made to all students.

United States.—An important change in the administration of Cornell University took place in the summer of 1937, when Dr. E. E. Day succeeded Dr. Livingston Farrand as president. At Harvard University the outstanding development of 1937 was the organization of the graduate school of public administration, made possible by gifts from Lucius N. Littauer. Construction was begun on a building to house the school on the site of Hemenway gymnasium. At the Massachusetts Institute of Technology, a feature of the biological engineering programme was the successful design and construction for a Boston hospital of the world's most powerful electrostatic X-ray generator. New York University provided a fresh example of its policy of integrating its activities with the practical affairs of everyday life, when it entered upon a co-operative programme with the City of New York for training sanitary engineers. Its medical school is expanding its work in public health and nursing by similar co-operation. The university acquired six additional buildings in 1937. The Northwestern University established during 1937 field courses in education, an educational clinic, and an experimental teaching programme in several high schools of the Chicago area. Among new buildings affiliated to this university was the Wesley Memorial Hospital on the Chicago campus. Princeton University, aiming at its goal of self-education, developed its programme of individual instruction, giving further recognition to differences in the needs and aptitudes of undergraduates. Physicists at Wisconsin University developed a generator giving a flash of lightning at 2,700,000 volts, the highest steady voltage ever yet attained and actually used in atomic disintegration. Yale University received three large gifts during the year: the anony-



Fox Photos]

AERIAL VIEW OF LONDON'S NEW UNIVERSITY BUILDINGS, INCLUDING THE TOWER WHICH HOUSES THE LIBRARY OF UNIVERSITY COLLEGE

mous Jane Coffin Childs memorial fund for medical research, the undisclosed amount of which is said to constitute it the largest gift ever made to Yale for work in the field of science; the bequest of $380,000 by the late George St. John Sheffield for general endowment of the Sheffield scientific school; and that of the late Noyes B. Clark of upwards of $500,000 to aid poor students who without such help could not enter the university.

URIU, BARON SOTOKICHI, Japanese admiral, born in 1857; died, Nov. 11, 1937. He graduated from the U.S. Naval Academy in 1881, and took an active part in both the Sino-Japanese War of 1894 and the Russo-Japanese War of 1904–05. He was known for many years as a champion of Japanese-American friendship

URUGUAY, a republic on the Atlantic coast of South America; language, Spanish; capital, Montevideo; president, Gabriel Terra. The area is 72,153sq.m. Population (1933), 1,993,234; (est. 1935) 2,035,440. There is a large Italian admixture, and a greater percentage of whites than in any other American country except Canada and Argentina. The chief cities are Montevideo (658,284) and Paysandú (40,000).

History.—Uruguay is governed by an elected president and congress. The year 1937 was uneventful, and was marked chiefly by efforts of the Government to reach an agreement with holders of defaulted bonds and to improve external trade relations. In July, an important debt adjustment agreement with the Foreign Bondholders' Protective Council was approved by congress. Under its terms, interest rates on four issues of external bonds aggregating £10,589,500 were, from an original 5 per cent. to 8 per cent., scaled down to 3½ per cent. to 4½ per cent. with interest and amortization to be resumed in 1938. Later in the year, announcement was made that the Government planned to offer holders of defaulted City of Montevideo bonds an exchange of national bonds, at a lower rate of interest. In May, the minister of finance visited the United States in an effort to effect a trade agreement and liberalization of tariffs, especially on frozen meat. No immediate result developed.

Trade and Communications.—Uruguay is directly connected by railway with Brazil and Argentina, by air with all parts of America, and by water with other parts of South America, the United States, and Europe. There are 1,650m. of railways, and over 3,000m. of national and 5,000m. of local highways. In 1936, imports were 65,935,000 pesos (Great Britain, 18 per cent.; United States, 13·4 per cent.), with mineral oils, sugar, and coal leading. Exports were 90,300,000, comprising principally wool, meat and meat products, and wheat, with Great Britain (25·8 per cent.), the United States (15·5 per cent.), and Germany (11·2 per cent.) the leading customers.

Agriculture.—Uruguay is primarily pastoral and agricultural. In 1930, there were 7,127,912 cattle and 20,558,124 sheep. Livestock and products account for 96 per cent. of the exports, largely wool. Agricultural production, chiefly wheat, corn, and linseed, is valued at 10 million pesos annually. Canning of meat for export is an important industry. Uruguay has 400,000 hectares (1 hectare equals 2·47 acres) of natural forests and 380,000 hectares of re-forested areas.

Finance.—The monetary unit is the peso (value: approx. 2*s.* 3*d.*). Government receipts in 1936 were 90,921,991·69 pesos; expenditures were 86,215,019·47.

Education.—Education is compulsory and free. In 1935 there were 1,563 elementary and secondary schools, with an enrolment of 190,346. The National University at Montevideo has a high standing. (L. W. Be.)

U.S.S.R. (The Union of Soviet Socialist Republics) is bounded N. by the Arctic Ocean; E. by the Pacific Ocean, S. by the Black Sea, Turkey, Iran, the Caspian Sea, Afghanistan, China, Mongolia, Manchukuo, and Japan; W. by Finland, the Gulf of Finland, Estonia, Latvia, Poland, and Rumania. The capital is Moscow (*q.v.*). The national flag has a red ground with the hammer and sickle in gold in the top left corner; above them a five-pointed star bordered in gold. Cities of over 500,000 inhabitants are: Moscow (1936) 3,567,900, Leningrad (1935) 2,739,800, Baku (1935) 670,000, Kiev (1935) 625,000, Kharkov (1935) 625,000, Tashkent (1935) 532,000, Gorky (formerly Nizhny Novgorod) (1935) 512,000, Odessa (1935) 509,000.

Area and Population.—Area: 8,168,559sq.m.; population (1937): 180·7 millions (43 per cent. born after the revolution), of which 46·1 millions (nearly 25 per cent.) are urban and 134·6 millions rural. In 1926, Russians were about 53 per cent. of the population, Ukrainians 21·2 per cent., White Russians 3·2 per cent., Kazakhs 2·7 per cent., Uzbeks 2·6 per cent., Tatars 1·9 per cent., Jews 1·7 per cent., Georgians 1·2 per cent. The social composition in 1937 was: workers and employees 34·7 per cent., collectivized peasants and co-operative craftsmen 55·5 per cent., individual peasants (other than Kulaks) and craftsmen 5·6 per cent., other sections of population (students, army, pensioners, etc.) 4·2 per cent. According to article 124 of the Constitution, freedom of religious worship and freedom of anti-religious propaganda are recognized for all citizens. In language, the population of the U.S.S.R. belongs to the following groups: Indo-Europeans, Caucasians, Semites, Finno-Ugrians, Samoyedes, Turks, Mongols, Tungus, Palaeoasiatics, and the Far Eastern civilized population (Chinese, Japanese, etc.). The press of the U.S.S.R. is published in 69 languages, books in 111. On the stage, 45 languages are used. According to article 121 of the Constitution, the citizens of the U.S.S.R. have the right to education. This right is ensured by universal compulsory elementary education, free of charge. The total number (1936–37) of kindergartens was 23,600, and of elementary and secondary schools 163,729. In 1935–36 there were 716 workers' faculties and 2,572 technical colleges. Universities and institutions of similar standing totalled 700 in 1936–37, and during that period the total number of pupils at elementary schools was 10,970,000 ; at secondary schools 17,093,000; and at adult schools 8,942,000. There were 551,000 university students (including 443,500 with State grants).

History.—In the course of 1937, with very few exceptions (*e.g.* Voroshilov and Litvinov), nearly all the People's Commissariats of the Union changed their chiefs through death, dismissal, or imprisonment. In most cases their places have been taken by younger adherents of Stalin hitherto hardly known. On Aug. 22 a new All-Union Commissariat for Machine Building was created, and, on Dec. 30, beside the Defence Commissariat, a separate Commissariat for War and Naval Affairs was set up. The Permanent Economic Council, formed on Nov. 23, is to include among its activities the planning of national economy, and the consideration of questions connected with prices, labour, wages, etc.

Constitution and Elections.—The year 1936 ended with the adoption of a revised constitution by the Eighth Extraordinary All-Union Congress of Soviets in Moscow on Dec. 5, a day which has been declared a public holiday in the Soviet Union. According to the New Constitution, the Soviet Union as a federal State includes 11 (formerly 7) Union Republics : the R.S.F.S.R., the Ukrainian S.S.R., White Russian S.S.R., Azerbaijan S.S.R., Georgian S.S.R., Armenian S.S.R., Turkmen S.S.R., Uzbek S.S.R., Tajik S.S.R., Kazakh S.S.R., Kirghiz S.S.R. (*qq.v.*)—which in their turn are formed from autonomous republics and provinces, territories, regions, districts, etc. The highest organ of State power of the Union is the Supreme Council, with its Presidium and two chambers of equal standing elected by the people for four years—the Council of Union and the Council of Nationalities. Legislative power belongs exclusively to the Supreme Council, and to it is also accountable the Council of Peoples' Commissars, the highest executive and administrative organ of State power in the Union. It is the prerogative of the whole Union to conduct international relations, the support and changing of the Constitution, organization of the defence, and the direction of all armed forces, foreign trade, planning of national economy and of the unified State budget, administration of banks, of industrial and agricultural establishments and trading enterprises of All-Union importance, transport and communications, establishment of basic principles in the field of education, public health and labour legislation, the working out of criminal and civil codes, and the issuing of All-Union acts of amnesty. For the rest, the separate Union Republics are sovereign. They have their own constitutions, Supreme Councils, and Councils of Peoples' Commissars, and retain according to Article 17 even the right of free withdrawal from the Union. The holders of local State power in the territories, autonomous provinces, districts, cities, and villages are the Soviets of Working People's Deputies.

The new constitution guarantees to Soviet citizens in the future freedom of speech, of the press, of meetings, of processions, the right to unite in public organizations, inviolability of person and homes, secrecy of correspondence, the right to work (with payment in accordance with quantity and quality), the right to rest (7-hour working day, annual holidays with pay), the right to material security in old age and to education, and the equality of all, independent of sex, nationality, and race. The right of citizens' personal property in savings, dwelling-house, household articles, etc., as well as the right to inherit such property, is expressly ensured. According to Article 7, every collective farm household shall have for personal use a plot of land attached to the house, and as personal property the subsidiary husbandry on the plot. A small-scale private enterprise of individual peasants and craftsmen based on personal labour is allowed, provided there is no exploitation of the labour of others (Art. 9).

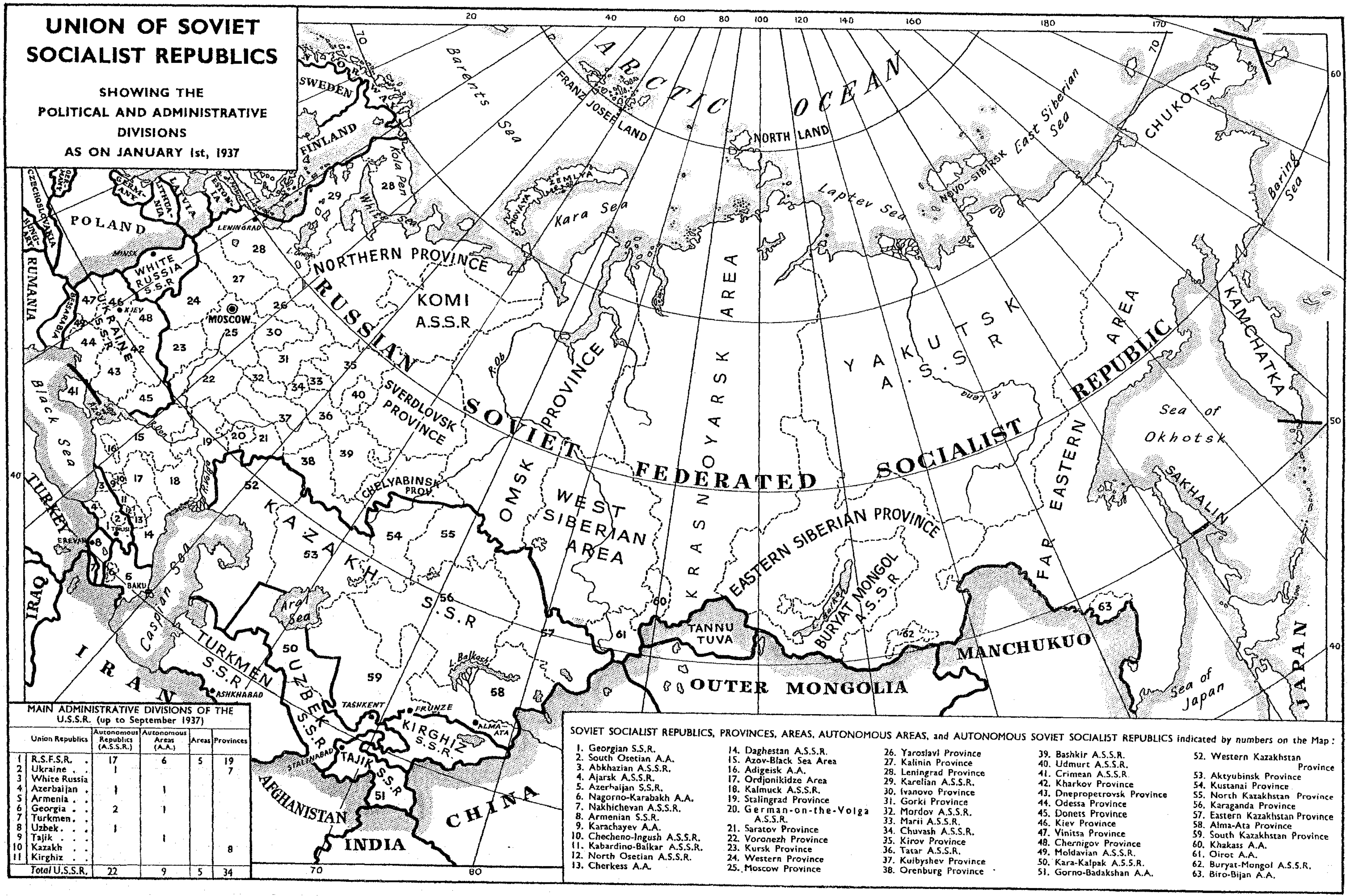
In the first months of 1937, in all the Union Republics extraordinary Soviet Congresses took place, at which the separate constitutions of the Union Republics were adapted to the new All-Union Constitution. On March 14, thousands of previously disfranchised Soviet citizens were automatically re-established in their rights, and on July 9, the Central Executive Committee of the U.S.S.R. adopted the rules for elections to the Soviet Supreme Council, in consequence of which all Soviet citizens of 18 years and upwards, including the Red Army, and excluding insane persons, received the right, irrespective of sex, race, nationality, religion, and even social origin or past activity, to take part in the elections and to be themselves elected. The elections were to be universal, equal, secret, and direct. After the end of October, a flood of mass meetings took place in the towns and villages of the whole Soviet Union, at which the candidates for the Supreme Council were nominated. The leading personalities of the Union thereby claimed first honours. With the help of the whole apparatus of propaganda, the Moscow Government sought to ensure a hundred per cent. electorate, to show the ' foreign Fascists and their agents that a united people stand behind the Red Army '. And, in fact, 96·8 per cent. of the over 94½ million franchised persons voted on Dec. 12 in the elections for the Supreme Council, although no other possibility was given the voters but to vote for the unopposed official nominee presented for each single-member constituency. The total number of deputies elected was 1,143, including 855 communists and 184 women. Socially, the new Russian ' Parliament ' consists of 55 per cent. officials from party and government ; 7½ per cent. from the ranks of the army and navy, 30½ per cent. workers and peasants, and 7 per cent. ' Intelligentsia and Illustrious Citizens '.

Domestic Affairs and Legislation.—This ' democratization ' of the Soviet Union has not been without its influence on the Communist Party itself, and on Feb. 27 the Central Committee of the Communist Party decided on the immediate conduct of secret and direct re-election of party officials in all party organizations, and the liquidation of the former practice of ' co-option '. And at the beginning of March, in two speeches much commented upon, Stalin himself subjected the increasing bureaucratization of the party to a devastating criticism, and demanded from it a closer contact with the masses of the people. At the elections held by secret ballot in the following months, a large number (*e.g.* 35 per cent. in Moscow) of former Party Secretaries lost their posts.

Another highly important feature in the internal political development of the Union, which in November solemnly celebrated the 20th anniversary of the Bolshevik Revolution, was the struggle, ruthlessly carried out in 1937, against all real or merely possible opposition elements, and those suspected of sympathy with Trotsky, in the party, administration, and army. The year began with a sensa-

UNION OF SOVIET SOCIALIST REPUBLICS

SHOWING THE
POLITICAL AND ADMINISTRATIVE
DIVISIONS
AS ON JANUARY 1st, 1937



MAIN ADMINISTRATIVE DIVISIONS OF THE U.S.S.R. (up to September 1937)

	Union Republics	Autonomous Republics (A.S.S.R.)	Autonomous Areas (A.A.)	Areas	Provinces
1	R.S.F.S.R. .	17	6	5	19
2	Ukraine . .	1			7
3	White Russia				
4	Azerbaijan .	1	1		
5	Armenia . .				
6	Georgia . .	2	1		
7	Turkmen . .				
8	Uzbek . . .	1			
9	Tajik . . .		1		
10	Kazakh . .				8
11	Kirghiz . .				
	Total U.S.S.R.	22	9	5	34

SOVIET SOCIALIST REPUBLICS, PROVINCES, AREAS, AUTONOMOUS AREAS, and AUTONOMOUS SOVIET SOCIALIST REPUBLICS indicated by numbers on the Map:

1. Georgian S.S.R.
2. South Osetian A.A.
3. Abkhazian A.S.S.R.
4. Ajarsk A.S.S.R.
5. Azerbaijan S.S.R.
6. Nagorno-Karabakh A.A.
7. Nakhichevan A.S.S.R.
8. Armenian S.S.R.
9. Karachayev A.A.
10. Checheno-Ingush A.S.S.R.
11. Kabardino-Balkar A.S.S.R.
12. North Osetian A.S.S.R.
13. Cherkess A.A.
14. Daghestan A.S.S.R.
15. Azov-Black Sea Area
16. Adigeisk A.A.
17. Ordjonikidze Area
18. Kalmuck A.S.S.R.
19. Stalingrad Province
20. German-on-the-Volga A.S.S.R.
21. Saratov Province
22. Voronezh Province
23. Kursk Province
24. Western Province
25. Moscow Province
26. Yaroslavl Province
27. Kalinin Province
28. Leningrad Province
29. Karelian A.S.S.R.
30. Ivanovo Province
31. Gorki Province
32. Mordov A.S.S.R.
33. Marii A.S.S.R.
34. Chuvash A.S.S.R.
35. Kirov Province
36. Tatar A.S.S.R.
37. Kuibyshev Province
38. Orenburg Province
39. Bashkir A.S.S.R.
40. Udmurt A.S.S.R.
41. Crimean A.S.S.R.
42. Kharkov Province
43. Dnepropetrovsk Province
44. Odessa Province
45. Donets Province
46. Kiev Province
47. Vinitsa Province
48. Chernigov Province
49. Moldavian A.S.S.R.
50. Kara-Kalpak A.S.S.R.
51. Gorno-Badakshan A.A.
52. Western Kazakhstan Province
53. Aktyubinsk Province
54. Kustanai Province
55. North Kazakhstan Province
56. Karaganda Province
57. Eastern Kazakhstan Province
58. Alma-Ata Province
59. South Kazakhstan Province
60. Khakass A.A.
61. Oirot A.A.
62. Buryat-Mongol A.S.S.R.
63. Biro-Bijan A.A.

tional trial against 17 leading communists, including Pyatakov, former vice-commissar for heavy industry, Radek, the mouthpiece of the Kremlin in foreign affairs, and Sokolnikov, former ambassador to Great Britain, who, according to the indictment, had sought, on the instigation of Trotsky, to overthrow the Government, in order to re-establish capitalism in the U.S.S.R., and had promised to Germany and Japan, in exchange for their support, considerable territorial compensation (Ukraine, Amur Territory) as well as great economic privileges and concessions. In order to hasten the removal of the present Soviet Government, these former communist leaders were said to have followed a policy of espionage, wrecking, and terror. All the accused fully admitted their guilt and made exhaustive confessions. On Feb. 1, 13 of them—Pyatakov, Muralov, and others—were shot, the remaining four, including Radek and Sokolnikov, were sentenced to periods of imprisonment ranging from 8 to 10 years. In March, Bukharin, the former chief editor of the official *Izvestia*, and Rykov, former Chairman of the All-Union Council of People's Commissars, were expelled from the party for counter-revolutionary activities. Great excitement was caused then by the arrest, at the beginning of April, of the all-powerful Yagoda, the general commissar of State Security, on account of the 'discovery of criminal activity'. On May 31, Gamarnik, the 'basest and most dangerous Trotskyist', the first vice-commissar for defence, took his own life, and—a great shock for public opinion abroad—Marshal Tukhachevsky (*q.v.*), together with seven other highly placed men of the Red Army, after a four-day secret trial by court-martial, was condemned to death and shot on June 12, having been found guilty of betraying military secrets to Germany, undermining the power of the Red Army, and preparing a military defeat with a view to the partition of the U.S.S.R.

On Dec. 20, one week after the elections to the Supreme Council, the shooting of eight more highly placed Soviet officials, including Karakhan, former ambassador to Turkey, and Yenukidze, Stalin's one-time right-hand man and secretary of the Central Executive Committee of the Union, was announced. The purge against Trotskyists and the hunt for 'enemies of the people and socialism', 'traitors to the Fatherland', wreckers, agents of Fascism, and spies was not, however, confined to the above-mentioned cases, but was carried out systematically throughout the Union and operated in all departments of public, economic, and cultural life. Also the religious revival several times mentioned in the Russian Press called forth oppressive measures by the Government against the clergy.

On Jan. 6, a census was taken which, however, in September was declared invalid 'owing to the violation of the most elementary principles of statistics.' A new census is to be taken in Jan. 1939. According to the declaration of the Government on April 28, the Second Five-Year Plan was completed on April 1 well ahead of schedule with regard to the main branches of national economy, and on the same day a decree was published reducing retail prices of various goods from 5 to 16 per cent. According to the economic plan for 1938 announced on Nov. 29, the value of the gross output of all industries is to be increased by 15·3 per cent. over 1937, while the production costs are to be reduced by 1·9 to 5·4 per cent. On Nov. 1 the wages of the lower-paid categories of workers were increased to 115 roubles per month as a minimum for those working on a time basis, and 110 roubles per month for those on a piecework basis.

In Feb. 1937, the Red Army received new field service regulations, and on May 16 military councils were placed at the head of each military area, as supreme representatives of military authority. These have to bear full responsibility for the political and moral conditions and mobilization efficiency of the military units within the area In summer, a new defence loan was floated for an amount of 4,000 million roubles, and within two months was heavily oversubscribed.

In the cultural realm, noteworthy events are the increase in teachers' salaries (January) and in Student Scholarships (November), the full reintroduction of scientific degrees and ranks (March), closing of all 'model and experimental schools' (April), and the measures taken for improving the teaching of foreign languages (September).

Soviet aviation in 1937 can point to a number of spectacular successes, especially in the Arctic.

Foreign Relations.— In foreign policy, in spite of repeated rumours of isolation tendencies in the Kremlin, the Soviet Union in 1937 continued to co-operate with the League of Nations, the Disarmament Bureau, and capitalistic countries. The basic principles of Soviet foreign policy were formulated by Litvinov in a reply to the American Secretary of State, Mr. Cordell Hull, in July as follows: the indivisibility of peace and collective security; the necessity of avoiding force in pursuit of national policy; the adjustment of international problems by peaceful negotiation; the faithful observance of international agreements; complete general disarmament, and the organization of a permanent peace conference. The Union has co-operated in the Spanish non-intervention Committee, and took part in September in the anti-piracy conference at Nyon and in the Nine-Power Conference on the Far Eastern crisis in Brussels in November. Soviet foreign policy was further based on mutual assistance pacts with France and Czechoslovakia. Relations with the other members of the Little Entente have not, however, improved appreciably. Yugoslavia continued to refuse the *de jure* recognition of the Soviet Government, and the Soviet Union could not see its way to recognize *de jure* the incorporation of Bessarabia into Rumania. Relations with Germany and Japan, who in Nov. 1936 signed an anti-communist pact, have continued to be very tense, and have been still further strained by bickerings in the press, and speeches of leaders with mutual complaints of aggressive war 'preparations'. However, it has been possible to settle by diplomatic means the many 'incidents', such as the imprisonment of German citizens in the Soviet Union for alleged anti-Soviet activities, numerous border clashes on the Siberian-Manchukuo frontier, the raid on the Soviet consulate in Tientsin, the dispute over the islands in the Amur river, etc. On the other hand, Germany and Japan had to agree to close most of their consulates in the Union by January 1938. And the long-established air line connecting Moscow with Berlin was in the summer finally suspended. It also proved impossible to settle the questions outstanding between Japan and the Soviet Union, such as the revision of fisheries treaty, demarcation of the Siberian-Manchukuo frontier, conclusion of a non-aggression pact, etc. At the end of Dec. 1937, the old Fisheries Convention of 1928 was extended for one year only. The relations of Moscow with Italy also had in 1937 some tense moments. The Soviet Government's making Italy responsible for the sinking of Soviet merchant ships in the Mediterranean in September, and the adherence of Mussolini to the German-Japanese anti-communist block in November, led to protest and to an exchange of sharp notes with Rome, though not to the breaking off of diplomatic relations.

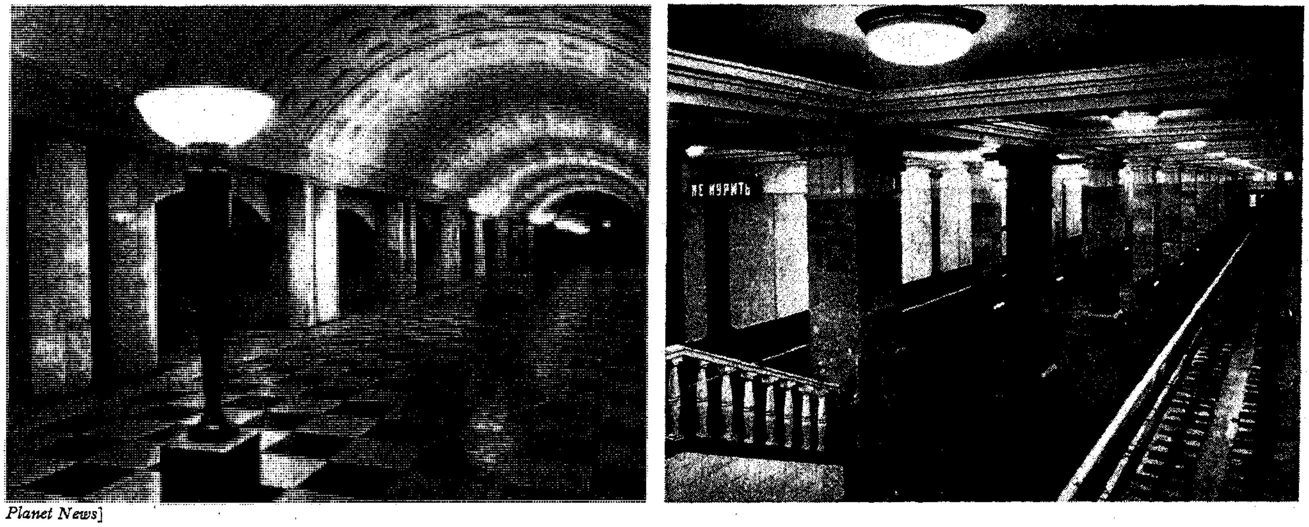
Relations with Great Britain remained thoroughly friendly. Moscow was represented at the Coronation ceremonies in May by M. Litvinov, Admiral Orlov, and M. Maisky, the Soviet ambassador, and the Soviet battleship *Marat* took part in the Naval Review at Spithead. On July 17, the U.S.S.R. signed a bilateral naval agreement with Great Britain; and only reserved special rights with regard to her Far Eastern fleet. In the middle of November, it was stated in the House of Commons that the whole financial credit of £10 million granted to the U.S.S.R. by the British Government in July 1936 had been utilized for purchasing British goods. On Aug. 4, after long negotiations, an important new trade agreement was concluded with the U.S.A., by which the Soviet Union, in exchange for the granting of unconditional most-favoured nation treatment, pledged itself to purchase during the next 12 months American goods to the value of at least 40 million dollars. On July 28, a U.S.A. warship visited the Russian port Vladivostok for the first time since the revolution. On Aug. 21, China and the U.S.S.R. signed a 5-year treaty of non-aggression, in which both pledged themselves 'to refrain from any attack upon each other, whether singly or in conjunction with one or several other Powers'. The reported cooling in relations between Turkey and the Soviets was contradicted by the visits to Moscow in July of the Turkish ministers of the interior and foreign affairs. The signing of a new trade agreement with Turkey followed on Oct. 8. Russia was specially active in 1937 in her policy with regard to the Baltic countries. Courtesy visits of the foreign ministers of Finland, Latvia, and Sweden to Moscow made it possible to establish relations with these countries on a firmer foundation.

In the Spanish question the Soviet Government, both at the non-intervention committee in London and at the League Assembly in Geneva, sought by all diplomatic means—although not always with success—to uphold the rights and interests of the Republican Government of Spain. In January the U.S.S.R. agreed to the decision of the non-intervention committee prohibiting the enlistment, departure, and transit of volunteers to Spain. At the anti-piracy conference in Nyon in September the patrol of the Black Sea was entrusted to the Soviet Government. And on Nov. 16, the U.S.S.R. accepted with great reluctance the proposal for granting belligerent rights to both sides in Spain after 'substantial' progress in the withdrawal of foreign troops. Many thousands of Spanish refugee children have been received in the U.S.S.R.

Trade and Communications.—*Agriculture.*—Figures for May 1937 showed that there are 1,627,367sq.m. of agricultural land, of which 1,431,635sq.m. belong to collective farms and individual peasant farmers and 195,732sq.m. to State farms. The sown area in 1937 was 522,000sq.m. Ninety-three per cent. of the peasant households are collectivized. Preliminary returns for 1937 show the year's total output of land produce as 16·6 milliard roubles, and of animal produce 6·4 milliard roubles. Over 117 million tons of grain and over 21 million tons of sugar beet were produced. In 1936, the yield of raw cotton was 23,900,000 centners, and of flax 5,300,000 centners.

Natural Resources.—Approximate reserve figures: coal, 1,200,000 million tons; oil, 3,200 million tons; iron ore, 10,778 million tons; manganese ore, 709 million tons; copper, 17,073,000 tons; lead, 4,124,000 tons; zinc, 9,932,000 tons; nickel, 1,054,000 tons; tin, 10,200,000 tons; 3,525,190sq.m. are under timber.

Commerce and Industries.—In 1936, the retail State trade was 80 milliard roubles; co-operative trade 26·9, and collective farms and peasant trade 15·6 milliard roubles. The turnover of foreign trade from Jan. to Sept. 1937 showed: exports, 1,218,549,000 roubles; imports, 1,012,761,000 roubles. Over 376 million roubles represent exports to Great Britain, and over 107 million roubles exports to the U.S.A. Further particulars relating to exports (Jan.–Sept. 1937) are: industrial goods 72 per cent., agricultural 28 per cent.; timber 321,790,000 roubles, textiles 180,727,000 roubles; mineral fuels, 141,893,000 roubles; furs, 139,440,000 roubles; grain, 95,856,000 roubles. Nearly 92 per cent. of the imports were goods for industrial purposes, the principal imports being (Jan.–Sept. 1937, thousand roubles): machinery, equipment, and electrical materials, 280,574; non-ferrous metals, 205,877; textiles, 130,380; ferrous metals, 80,495. The principal sources of imports were (thousand roubles) U.S.A., 184,157; Germany, 80,318; Great Britain, 145,324. The value of orders placed by the Soviet Trading Organizations in Great Britain (Jan.–Oct. 1937) was £18,364,479. Principal imports from the United Kingdom



Planet News]

MOSCOW SUBWAYS. (ON LEFT)—THE CENTRAL HALL OF AN UNDERGROUND STATION, WITH EXITS TO THE PLATFORMS, IN WHITE AND GREY MARBLE, WITH BLACK LABRADOR STONE. (ON RIGHT)—UNDERGROUND PLATFORM WITH COLUMNS DRESSED WITH YELLOW MARBLE AND CROWNED WITH PLASTIC CAPITALS. THE NOTICE PROHIBITS SMOKING to the U.S.S.R. were non-ferrous metals, rubber, machinery, and wool; and principal exports from the U.S.S.R. to the United Kingdom were gold, timber, furs, and grain.

Industrial output was as follows: (Jan.–Oct. 1937, thousand tons): coal, 100,880; steel, 14,680; pig-iron, 12,080; rolled metal, 10,720; (Jan.–Dec. 1936) oil, 29,293; electric power, 32,800 million kW. hours; gold (private estimate), 7,350,000 fine ounces. Light industries were represented by (1936 figures, in million metres): silk, 52; cotton, 3,299; wool, 98; linen, 286. From Jan. to Nov. 15, 1937, 1,650,000 tons of fish and 1,190,000 tons of sugar were produced. The value of the industrial output for the first half of the year 1937 (at prices 1926–27) was, in million roubles: heavy industry, 17,917; light industry, 6,995; food, 5,267; timber, 1,457.

Transport, etc.—In 1937, there were 53,748m. of railway lines; and during 1936 the railways carried 991·6 millions of passengers and 483·2 million tons of freight. Ninety-five per cent. of foreign trade was shipped by sea, and in 1936, 28,646,900 tons of cargo and 2,791,000 passengers were carried in Soviet and in 1,467 chartered foreign ships. Several powerful new ice-breakers were launched at the Leningrad shipyards in 1937. The length of river routes in 1937 was 68,351m., and the Moscow–Volga Canal was opened during the year. (The White Sea–Baltic Canal has been open since 1933.) Between 1931 and 1935, 115,014m. of new roads were built; and there are at present under construction a 16-metre wide road from Moscow to Kiev (538m.), and one from Moscow to Minsk (407m.). The number of motor vehicles in 1937 was 585,000. There are 33,554m. of air lines, carrying (Jan.–Sept. 1937) 20,838 tons of freight, 3,753 tons of postal packets, and 123,793 passengers. Moscow is connected by air with Vladivostok, Tbilisi (Tiflis), Tashkent, Riga and Stockholm, and Kiev and Prague and other cities. The Soviet Union had, in 1936, 71 radio stations. In 1937, three new automatic telephone exchanges were installed in Moscow and one in Leningrad, and further exchanges are under construction in 47 cities.

Finance and Banking.—The currency units are the rouble, and the chervonets of 10 roubles; the exchange value of £1 sterling was fixed in Oct. 1937 at 26·25 roubles. On Jan. 1, 1937, banknotes issued for circulation were to the value of 802,032,172 chervontsy; treasury notes 2,800,400,000 roubles. The gold reserve was estimated at the end of 1936 at about £236 million. Budget estimates for 1937 were: total revenue 98,069,500 thousand roubles; total expenditure 97,119,500 thousand roubles, of which approximately 27 per cent. was apportioned for culture and social purposes, and 20 per cent. for defence. Taxation estimates for 1937 (in thousand roubles): turnover tax, 76,795,400; profit tax, 6,304,175; income tax and other taxes from enterprises and organizations, 972,905; agricultural tax from collective farmers and individual peasant households, 650,000. According to article 14 of the constitution, the administration of banks comes under the jurisdiction of the U.S.S.R.

Main Soviet Banks: the State Bank of the U.S.S.R. and its branches; Long Term Credit Bank for Industry and Electrification (Prombank); the All-Union Trade Bank (Vsetorgbank); the Central Agricultural Bank (Selkhozbank); the Central Municipal and Housing Bank (Tsekombank). In Savings Banks were deposits (1936) of over 4,000 million roubles. Statistical research work is concentrated in the Central Bureau of National Economy Accounting (Tsunkhu) of the All-Union State Planning Commission (Gosplan), which gets regular reports from each administrative, industrial, and agricultural body and from all other bodies and organizations.

Defence Forces, etc.—Universal military service lasts 2–4 years. The conscription age is 19 years by January of the Conscription Year. The Union is divided in eleven military areas. In 1936 the numerical strength of all services was 1,300,000. There were 13 military academies (16,000 students), and 6 military colleges attached to universities. There are Baltic, Black Sea, Northern, and Pacific fleets. No accurate statistics for the navy are available. The *League of Nations Armaments Year Book for 1937* gives the following data for 1936 taken from unofficial publications: 4 battleships (93,786 tons); 7 cruisers (49,854 tons); 32 destroyers (34,793 tons). A new 3,500-ton destroyer, *Tashkent*, built in Italy, was launched on Nov. 21 at Leghorn. The number of submarines is estimated variously from 27 to 175. Of the infantry units of the Army, 77 per cent. were in 1936 regular divisions, and 23 per cent. territorial divisions. There were also mechanized units and cavalry units. No official figures are published for the Air Force. Private estimates vary between 4½ and 5½ thousand military planes (including bombers, fighters, reconnaissance crafts, etc.). The Workers' and Peasants' Militia numbered 110,000 men in 1933; special troops of the People's Commissariat for Internal Affairs 45,390; escort guards 13,200; and customs guards 1,800.

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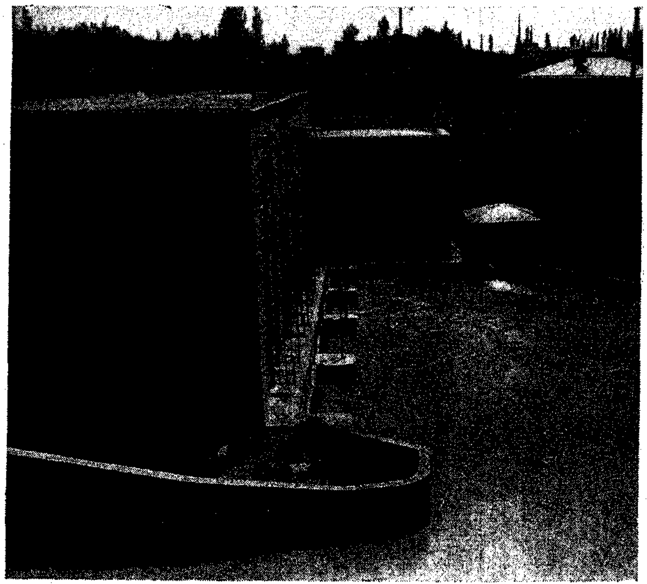
(S. YAK.)

UZBEK S.S.R. An important Central Asiatic Soviet Republic, a member of the U.S.S.R. (*q.v.*), bordering on Afghanistan, the Republics of Turkmenistan, Kazakhstan, Tajik S.S.R., and Kirghiz S.S.R., and in the north on the Aral Sea. Capital: Tashkent. National flag: red ground with the name of the Republic in gold in the top left corner in Uzbek and Russian. Leading cities: Tashkent (1936)



Planet News]

UZBEK S.S.R. THE HYDRO-ELECTRIC STATION ON THE BOZSU RIVER, WHICH SUPPLIES POWER TO TASHKENT

515,000 inhabitants, and Samarkand (1936) 130,000 inhabitants.

Area: 142,857sq.m. (mountain landscape, with great oases especially in the Fergana Valley). Population (1933): 5,418,000 (rural 4,117,000, urban 1,301,000), made up of Uzbeks 76 per cent., Russians 5·6 per cent., and some Kara-Kalpaks and Kazakhs. The chief languages spoken are Uzbek, Russian, Kara-Kalpak, and Kazakh. The total number of school pupils (1936–37) was 791,000.

History.—On Feb. 14, 1937, a new constitution was adopted in Tashkent by the Sixth Extraordinary Uzbek Soviet Congress. According to it, the Uzbek S.S.R. consists of the Kara-Kalpak A.S.S.R., 3 regions, 71 districts, 2 national districts, and 21 cities, which form special administrative units. 93·5 per cent. of the population took part in the elections on Dec. 12, 1937, for the Supreme Council of the U.S.S.R. In the summer of 1937 in Uzbekistan as in other Union republics, many of the highest State and party officials (including the premier Khodzhaev and several commissars) were dismissed as alleged Trotskyists and Fascist agents and imprisoned for anti-government activities.

Trade and Communications.—*Agriculture*: Sown area (1936), 10,299sq.m. In 1937, 95 per cent. peasant households were collectivized. Chief products: cotton (first place in U.S.S.R.), rice, fruit, grapes. Stockfarming of sheep and the valuable Astrakhan lamb is carried on.

Natural resources include copper, sulphur, and oil.

Commerce and Industries: Technically and economically the most advanced of the Central Asiatic Soviet Republics, the Uzbek S.S.R., produces four-fifths of the total Central Asiatic industry. Retail trade turnover (1936): 3·4 milliard roubles. Chief export articles: cotton, silk, wool, hides (Astrakhan lamb). Imports: grain. Output of industry: (1936, at prices 1926–27) 1,175 million roubles. Output of electricity: (1936) 230 million kilowatt-hours. Industries: cotton, wool, silk, leather, oil, machine building.

Transport: Length of railways (1936): 1,166m. (two-thirds of the total railways of Soviet Middle Asia). Freight carried (1936): 10,659,000 tons. (S. Yak.)

V

VACCINE THERAPY : *see* Immunization, Theurapeutic.

VAN ZEELAND, PAUL (1893–), Belgian statesman and economist, born at Soignies, was educated at Louvain and Princeton (U.S.A.) Universities. He entered the Belgian National Bank in 1922, and became its Secretary in 1924 and a Director in 1926. As Professor in the Faculty of Law at Louvain (1928), he founded the Louvain Institute of Economic Sciences. Between 1922 and 1933 he represented his Government at various international conferences, including Stresa (1932). In 1931 he visited Russia, and wrote *Reflections on the Five-Year Plan.* In 1934 he was Minister without Portfolio in the De Broqueville Cabinet, and on March 25, 1935, became Prime Minister of a Coalition Government, holding also the portfolios of Foreign Affairs and Foreign Commerce. This Government resigning in May 1936, he formed a new one on June 14, and immediately thereafter presided at the Assembly of the League of Nations. Severely attacked in Parliament in 1937, he won in April a decisive victory in a by-election at Brussels against M. Degrelle, the Rexist leader, and in September, after a spirited defence, received a vote of confidence in Parliament. Attacks on him, on the ground that while Premier he had received money from the National Bank, continued, and he resigned office on Oct. 25. In April 1937 he undertook at the request of Britain and France, an international economic mission to explore the possibility of overcoming obstacles to international trade, and visited the United States in June, to confer with President Roosevelt.

VARDON, HARRY, British professional golfer ; born at Grouville, Jersey, May 9, 1870 ; died at Totteridge, March 20, 1937. Vardon was one of the greatest golfers of all time, and won the British open championship in 1896, 1898, 1899, 1903, 1911, and 1914. He also won the American championship in 1900, and the German championship in 1911. He was professional to the South Herts Golf Club at Totteridge from 1903 until his death.

VARNAVA, Patriarch of the Serbian Orthodox Church ; born at Plyevlye, in the Sanjak of Novi Bazar, Aug. 29, 1880 ; died July 24, 1937. His name was really Petar Rositch, but he assumed the name Varnava in 1905 on entering a monastic order. He was Bishop of Veles, 1910 ; Metropolitan of Skoplye, 1920 ; and Patriarch of the Serbian Orthodox Church from 1930. He was strongly anti-Soviet, and was the protagonist of his Church's fight against the Yugoslav Government's concordat with the Vatican.

VARNISHES : *see* Paints and Varnishes.

VATICAN (*Città del Vaticano*), the Papal palace of the Vatican at Rome, with its museum and gardens, St. Peter's, and the area immediately adjacent (including the Piazza di San Pietro), with 13 scattered buildings in other parts of Rome which enjoy extra-territorial rights, forming (since 1929), a sovereign State, completely surrounded by Italian territory, under the temporal rule of the Pope, who appoints a Civil Governor with full executive powers. Ruler, Pope Pius XI (elected 1922). National flag, the Papal standard of white and yellow, charged with St. Peter's Keys and the triple Papal tiara.

Area and Population.—Area, 108¾ acres ; population (census 1932), 1,025. All the inhabitants are Italian-speaking Roman Catholics, mostly of Italian or Swiss origin. The circumstances of the State make governmental provision for elementary education unnecessary. New buildings for the Papal University were inaugurated in Nov. 1937.

Communications, Currency, etc.—There is a railway station connected by a short line (about 200yd.) with the Italian railway system ; a radio station, from which the Pope occasionally broadcasts ; and a State postal service, which issues its own stamps. Italian money circulates, but the Vatican State also mints its own coins, corresponding with Italian coins in weight and fineness, though bound by agreement not to mint more than one million lires' worth of non-gold coins in any one year. An agreement was made in 1937 by which the Vatican would issue coinage to the value of 800,000 lire, including silver 10- and 5-lire pieces, nickel 2- and 1-lire and 50- and 20- centesimi pieces, and copper coins of 10 and 5 centesimi.

Defence Forces.—The only 'defence forces' are the Papal bodyguard, the 'Swiss Guards', numbering about 100, and the Papal gendarmeries of about 70. The Piazza di San Pietro is, by treaty, subject to the powers of the Italian police.

History.—The Concordat agreed upon between the Holy See and Yugoslavia, passed after heated debate by the Yugoslav Lower House (Skuptshina) in July, was abandoned in October before its submission to the Senate. Diplomatic relations with Ecuador were resumed and a Papal Nuncio sent after a breach lasting 50 years ; and in August a chargé d'affaires of General Franco's government in Spain was accredited to the Holy See. A Pontifical Academy of Sciences, including several British members, was inaugurated on May 31. In August, Fr. Alfonso Camillo de Romanis, O.S.A., was appointed to succeed Fr. Zampini, who had died in June, as Papal Vicar-General of the Vatican City. The small model prison built in 1936 received its first inmate during the year—a prisoner charged with insulting a gendarme.

VEGETABLE OILS AND OILSEEDS. The use of vegetable oils and oilseeds in the manufacture of various products has expanded enormously during the last 30 years. Formerly only a few sources of vegetable oil were exploited, such as olive oil, cottonseed oil, and linseed oil ; but to-day the main varieties in general use include soya bean, maize, groundnut, coconut (copra), palm, linseed, hemp, perilla tung, sunflower, rape, and sesame, apart from whale and other marine oils, oleo, and oleo stearine. In extracting oil from seeds and nuts two commodities are produced : firstly, oil, used principally in foods (margarine, etc.), but also in soap and to a lesser extent in paints, varnishes, linoleum, and oilcloths ; secondly, oilcake, the crushed seeds or nuts, which constitute an important concentrated food for livestock. The proportion of oil to cake may vary from 18 to 82 in the case of cottonseed to 63 to 36 in the case of copra. If at any time the demand for oilcake improves relatively to the demand for oil, manufacturers will incline to purchase seeds with a lower oil content. Moreover, many oils can be used interchangeably in the manufacture of margarine and soap; hence the market is highly sensitive to changes in supplies and price of the different kinds. (X.)

Production and Trade.—World cottonseed production in 1937–38 will exceed the record level of 1936–37. The United States, the most important users, will have record supplies and, following substantial net imports of oil from 1935 to 1937, net exports are likely in 1938. Cottonseed shipments from Egypt, by far the chief exporter, altered little from 1936 to 1937, but oil exports increased.

After rising slightly in 1936–37, world production of linseed will probably be appreciably less in 1937–38. These changes follow crop fluctuations in Argentina, whose shipments in 1937 were heavy. Indian production in 1936–37 slightly exceeded the previous season's total, but exports in 1937 were below the 1936 level. Acreage for 1937–38 in India has increased.

The Indian groundnut (peanut) crop in 1936–37 was large. Production from the larger area planted in 1937–38 may, with favourable conditions, approach the 1933 record. The crop is reported to be large this season in French West Africa, but somewhat below the previous year in Nigeria. Exports in 1937 from all three areas increased over 1936.

The Manchurian soya-bean crop in 1937 was much the same as in 1936. Exports also showed little change.

Production statistics for copra, palm kernels, and palm oil are very incomplete, and exports, though significant to the market, afford an inadequate guide to output. Total exports of copra in 1937 were probably somewhat below the high level of 1936, the Philippines, the Netherlands East Indies, and Malaya all shipping less, but coconut oil exports remained about the same. Ceylon's exports of both products increased substantially.

World exports of palm kernels and palm oil in 1936 substantially exceeded previous levels. In 1937, shipments from British and French Colonies in West Africa declined. Palm-kernel supplies were thereby reduced, but their smaller exports of palm oil were about offset by further increased shipments from the Netherlands East Indies, Malaya, and the Belgian Congo.

Mediterranean olive production increased in 1937 after a poor 1936 crop.

In the United States, the small domestic supplies of cottonseed, linseed, and animal fats resulting from the severe 1936 drought, were partly compensated by crushing more domestic soya beans and groundnuts. But with bigger consumption of vegetable oils, import demand was of record dimensions. In particular, imports of linseed, copra, palm kernels, and cottonseed, palm, and palm-kernel oils increased substantially in 1937 over 1936.

In Germany, supplies of vegetable oils declined in 1937, compared with the level of the previous year. Imports of palm kernels, exceptionally large in 1936, declined markedly. Also large quantities of palm-kernel oil were exported. Imports of soya beans recovered but, as their oil content is low, this chiefly affected feeding-stuffs supplies.

In the United Kingdom, the available supplies of vegetable oils in 1937 showed practically no change over 1936. Increased imports of cottonseed, groundnuts, and linseed oil were offset by smaller imports of copra and palm oil. Exports of groundnut and palm-kernel oils rose.

French imports of groundnuts and copra increased substantially in the first 11 months of 1937, compared with the same period in 1936. Linseed imports remained at a high level, but imports of palm kernels and palm oil declined appreciably.

London oilseed prices, generally, reached a peak in Jan. 1937, and thereafter declined. For short periods about March, July, and September, the fall was checked, but by December two years' advance had been lost. Palm kernels, palm oil, and copra, after rising steeply in 1936, fell by nearly one-half during 1937. Linseed and soya-bean prices were exceptions, the former showing little change over the year and the latter remaining high until about October, then falling sharply. (J. L. C.)

VENEREAL DISEASES. Probably the two most important events of 1937 in connexion with venereal diseases are the awakening of the public conscience in the United States to the dangers of V.D. and the introduction of drugs of the sulphonamide group into the treatment of gonorrhoea.

Recently, the passing of the Social Security Act has indicated the realization by the authorities of the necessity for undertaking the control of V.D., and has made more funds available for this purpose; but even more effective has been the campaign inaugurated in many States for the provision of a comprehensive programme for tackling the problem, including free treatment, free blood-tests, free supply of drugs to medical practitioners, the setting up of more efficient clinics, and the education of both the medical profession and the general public. America, impressed by the results obtained in Denmark, Sweden, and Great Britain, has started to set her house in order.

Struck by the efficacy of *Prontosil* in the treatment of streptococcal infections, many workers have tried this and similar compounds in gonorrhoea. Hanschell was one of the first in Great Britain to report his experiences, and claims very good results with Prontosil in early cases; on the other hand, Felke, who is almost equally enthusiastic, using DB90, finds that this drug exerts its greatest influence after the first few weeks of the disease. Opinions differ as to whether complete cure is obtained with these drugs alone, but there can be no doubt that they have a very remarkable ability to clear up the symptoms and signs.

Mapharsen, an arsenical preparation which is effective in one-tenth of the dose of arsphenamine, is now receiving an extended trial in the treatment of syphilis. It appears to cause fewer severe reactions than the arsphenamines, but only time will show whether it is as efficient in eradicating the disease.

So little is known about the different strains of gonococci that the work of Caspar is deserving of mention. He finds that most gonococci belong to either Type I or Type II, but that certain ones—notably those obtained from old chronic cases—conform to neither type, and behave abnormally with his type sera; moreover, they do not produce the polysaccharides of Types I and II.

Hudson, working in the valley of the Euphrates, studied a form of non-venereal syphilis previously almost unknown. He calls it 'Bejel', and points out that it is extremely prevalent amongst certain Bedouin tribes and differs from venereally acquired syphilis ('Franghi'), and in many respects occupies a position midway between syphilis and yaws.

Much has been written about Lymphogranuloma Inguinale (Climatic Bubo), which has been more frequently recognized in recent times. As yet the causal organism has not been identified with certainty, but Miyagawa and his colleagues describe 'granulo-corpuscles', and their work has been, to some extent, confirmed by others. As regards treatment of this disease, the French seem to lead the way—principally probably because the disease is so prevalent in certain of their colonies. Many drugs have been tried, but salts of antimony ('anthiomaline'), salicylate of soda, and colloidal rhodium seem the most efficacious.

It is well known that V.D. always takes a heavy toll of soldiers in war, and the efforts of the Republican authorities, as described by Sinclair-Loutit, in Spain seem to have been very successful in lessening its ravages. Posters are displayed in all public places giving graphic descriptions of how these diseases are acquired and how prevented, prophylactic outfits are available for all, and patients in hospital—if illiterate, as many are—are given an intensive course of education, whilst in the evenings they are entertained with concerts, lectures, wireless, debates, etc. What is most interesting is that routine treatment of gonorrhoea by lavage with potassium permanganate solution is always available, as an ingenious contrivance is fitted up whereby the temperature and concentration of the solution in bulk are electrically controlled. This apparatus will function for weeks uncontrolled. The result of these measures has been an enormous reduction in gonorrhoea amongst the troops.

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(T. E. O.)

VENEZUELA, a federal republic in northern South America; language, Spanish; capital, Caracas; president, Eleazar López Contreras. The area is 393,976sq.m.; population (1936 census) 3,406,073. The chief cities, with their populations, are: Caracas (203,437), Maracaibo (99,171), Barquisimeto (50,774), Valencia (49,963).

History.—The main features of Venezuelan development in 1937 centred about the efforts of President López Contreras to place the country on a relatively democratic basis and at the same time maintain internal stability. During the year a number of alleged Communists were exiled, and past political exiles were denied readmission. Several strikes were adjusted peaceably, in sharp contrast to the procedure under the recent Gomez dictatorship (1907–35). In furtherance of the reform policy launched in 1936, several laws were enacted for improvement of labour and agriculture and for the better control of foreign residents. Late in the year formal negotiations for a reciprocal trade agreement with the United States were begun.

Trade and Communications.—Venezuela has steamship communications through La Guaira (the port for Caracas), Maracaibo, and other ports, and adequate external air communication. There are 683m. of railways and a relatively good highway system. Navigable rivers, especially the 4,000m. Orinoco system, provide inland communications. Foreign trade in 1936 aggregated 980,053,169 bolivares in value, an 11·7 per cent. increase over 1935. Imports (textiles, foodstuffs, and miscellaneous manufactured articles) totalled 211,590,300 bolivares in 1936, an increase of 27·6 per cent., with the United States supplying 47 per cent. Exports were 768,462,869 bolivares value (an 8 per cent. increase), 89 per cent. of which was in petroleum products, with coffee, gold, and cacao also important. Most of the petroleum export was to Curaçao, with the United States second.

Production.—Venezuela is the world's third largest producer of petroleum, with an output for the year ending Oct. 31, 1937, of 175,156,393bls., over 8 per cent. of the world total, against a 1936 production of 153,314,971bls. Taxes derived from petroleum comprise approximately a third of the national revenue. The chief agricultural product is coffee, yielding about 125,000,000lb. annually, 30 per cent. of which is exported to the United States. Cacao to the value of 6,774,543 bolivares was produced for export in 1935. Cattle and goats are important resources, providing a valuable hide and skin export. The monetary unit is the bolivar. Venezuela has no external or internal debt. The 1937 budget totalled £11,088,911.

Education.—Compulsory primary education under federal control is provided by law. The school system has been in a thoroughly disorganized condition. A concerted drive for betterment, under direction of Chilean and other foreign educators, was begun, however, by the present Government late in 1936, and the 1937 budget allotted £869,754 (8 per cent.) for education. Venezuela has compulsory military service and a small navy for coastline protection. (L. W. BE.)

VERMONT: *see* UNITED STATES OF AMERICA, THE.

VERNALIZATION: *see* BOTANY.

VETERINARY SCIENCE. The years 1936 and 1937 have been of particular importance in the history of veterinary science in Great Britain as marking a period in which the members of the veterinary profession were urgently called upon to develop the comparatively small part which they had played hitherto in the preventive medicine aspect of disease in relation not only to animals, but to man: for there is quite a formidable list of diseases which are communicable from animals to man. The scheme was initiated by Mr. Walter Elliott, when minister of agriculture and fisheries, and energetically carried on by his successor, Mr. W. S. Morrison; the outcome being the passing of the Livestock Industry Bill, which has dealt, amongst other things, with the prophylaxis of animals in health and their treatment, or disposal when found to be diseased. With these ends in view, a new Body under Government auspices, known as the State Veterinary Service, has come into being, its function being to endeavour to eradicate certain contagious diseases of animals and thus to promote the welfare of animal husbandry and the health of the herds and stock. Statistics show that more than £14 millions are lost annually in Great Britain from animal diseases which are preventable. An Agricultural Research Council has been appointed which is similar in function to the Medical Research Council, and it has been openly expressed that the most urgent subject of inquiry for the economic well-being of the British farmer is that of animal diseases. After careful and detailed inquiry, this Body decided to appoint seven technical committees of experts on various groups of diseases. These committees are now doing research work on the Braxy-like diseases of sheep; contagious abortion; fowl paralysis; coccidiosis and similar diseases; Helminths of all classes; Jöhne's disease; swine fever and similar ailments, including a contagious enteritis of young pigs; and a joint committee, with the Medical Research Council, is also working on tuberculosis.

Field research stations and laboratories, in which these diseases can be studied, are now available, and the years 1936 to 1937 have witnessed a great advance for veterinary research. In addition, the new laboratories and hospital premises of the Royal Veterinary College, London, were opened by their Majesties the King and Queen on Nov. 9, 1937. Although not yet completed, the new buildings already have involved the expenditure of more than £250,000, of which the Government contributed £150,000.

In the main college block are accommodated the four teaching departments of medicine, anatomy, pathology, and physiology. Attached to each department are small private laboratories for individual research by the staffs, and rooms are also set aside for post-graduate teaching and research work by visitors from other centres. In the department of preventive medicine, some 100,000 doses of the new synthetic medium tuberculin are manufactured every month for the control of animal tuberculosis. The impetus and encouragement given to British veterinary research by the provision of new facilities both at the college and in the sphere of field research already have begun to make themselves felt.

The widespread nature of tuberculosis in cattle, and the fact that—*via* the milk—it is contagious to man, has caused the State Veterinary Service to make its first assault upon the problem of the tuberculous cow; in England, and especially in America, considerable headway has been made. It is not so well recognized as it ought to be by the owners of stock, that it pays to keep contagious disease out of the stable, cow-house, and kennel, as healthy animals not only cost less to look after from the food point of view, but the fees for veterinary attention also are definitely less; and some diseases, such as tuberculosis and contagious abortion, are so insidious in their spread that a great deal of mischief can be done before they are discovered.

The eradication of tuberculosis is only the beginning of the campaign being undertaken by medical and veterinary men alike to exterminate those diseases which are communicable to man. The farmer and stock-owner is looking to the State service work to clear up from his flocks and herds other diseases, such as contagious abortion, mastitis, Jöhne's disease, foot and mouth, and anthrax; and it is his hope that he may see the day when these, like cattle plague, pleuro-pneumonia, glanders, and rabies, have been conquered. Investigation in the control of Bang's disease (contagious abortion) is being vigorously pushed forward on a large scale in the United States—and indeed in all countries—especially as the drinking of milk from cows suffering from the disease has been known to cause undulant fever in man.

During 1937 some unusually severe and widespread outbreaks of foot and mouth disease occurred on the continent of Europe, especially in Germany, and these extended to England, the eastern counties and Kent being severely affected. Renewed efforts are being made in every country against this disease in particular, and Great Britain is doing her share of the research, having appointed a distinguished body of scientific workers to undertake the task. America is fortunate in being free from this scourge.

(F. T. G. H.)

United States.—Tuberculosis eradication in cattle has been vigorously advanced in the United States since 1917. At the end of 1937, 45 of the 48 States in the United States were officially accredited. In order to be accredited, the cattle of a State must show an incidence of tuberculosis of ½ of 1 per cent. or less. To achieve this, more than 178,139,976 cattle have been subjected to the tuberculin test. During the period 1917 to 1937, respiratory tuberculosis in man has decreased from 124·6 to 49·8, and other forms from 22·5 to 5·2 per 100,000 population. The extent to which the eradication of tuberculosis in cattle is responsible for its decrease in men is a subject for careful analysis.

Much attention has been directed to the study of parasitic diseases—especially those transmitted to man. During 1937, in America and Canada, trichinosis was perhaps the most important of those diseases brought to the attention of the veterinarian. Hall, of the United States Public Health Service, claims that approximately 17·5 per cent. of the population of the United States are infested with trichinae. At once this health problem becomes a problem for the veterinary profession, to which rightly belongs the field of production and inspection of meat. It is now known that the principal source of the infection of trichinae to the pig is not infested rats, but infested raw pork scraps fed in garbage. Hall claims that 5 per cent. of garbage-fed hogs are infested with trichinae, and hog raisers have been advised to cook all garbage before feeding.

Much research in the past year has been done on equine encephalo-myelitis of virus origin. While the disease is not transmissible to man, results in the horse show that prophylactic vaccination and serum treatment give promise. Spirochetal jaundice (Weil's disease) is receiving more than occasional notice. This infection is spread by rats, and investigators have shown that in some parts of the country as many as 33 per cent. of the rats are infected. The part that the dog plays in the transmission is an unknown factor, although it is the most commonly affected of veterinary patients.

Much interest is now being taken in the control of mastitis in cattle, and the researches of Minett are being closely followed, although no definite conclusions can yet be drawn. Important developments have been made in the treatment of pet animals, as shown by the excellent hospitals, which have been built in the principal cities; and animal surgery has made wonderful strides through the general use of anaesthetics and the application of modern aseptic technique.

VICTORIA, a State of the Australian Commonwealth, lying in the south-east between latitudes 34° S. and 39° S. and longitudes 141° E. and 150° E., and occupying 87,884 sq.m. The State Governor, representing H.M. King George VI, is Lord Huntingfield, K.C.M.G. Population (March 31, 1937), 1,856,096, forming 27·2 per cent. of the population of Australia. Capital, Melbourne (*q.v.*). The premier of a Country Party Government is Mr. A. A. Dunstan.

History.—A bill regulating the relations between the two Houses of Parliament was passed by the Legislative Assembly on July 27, 1937; in the Legislative Council the motion for the third reading was carried by 16 votes to 13, but this was less than the absolute majority required by the constitution, and the bill was therefore lost. It provided that if the Council rejected or failed to pass a bill transmitted from the Assembly, or passed it with amendments to which the latter would not agree, then, if the Council again failed to pass the bill on re-transmission in the next session, it would nevertheless become law. A number of safeguards were attached. When the Legislative Council failed to accord this measure the required majority vote, the Government secured a dissolution.

The general election was held on Oct. 2. The resulting party strengths were as follows (previous strengths in brackets): Country Party, 20 (20); Labour 21 (18); United Australia Party, 21 (24); Independents, 3 (3). The Country Party resumed office with the support of Labour. A revised constitutional reform bill has since been accepted by both Houses. It provides that the Assembly may be dissolved if a bill passed by it is rejected by the Council. If the dispute between the two Houses then continues, the Council may be dissolved, and if it still refuses to pass the bill a final decision lies with a joint sitting of both Houses. Extra delay is required for constitutional bills.

The Governor's speech at the opening of Parliament on Oct. 19, 1937, foreshadowed legislation prolonging the Financial Emergency (Mortgages) Acts, amending the law relating to companies and workmen's compensation, and touching, *inter alia*, moneys held in trust, widows' pensions, fair rents, and the agreement for establishing an aircraft factory at Port Melbourne.

Good rainfall in the latter part of the year gave promise of a satisfactory season, and the economic trend continued upward (*see* MELBOURNE, and below). Transport developments included the construction of a streamlined, air-conditioned train in the State Railways' workshops.

Trade, Industry, and Finance.—Production in 1935–36 was valued (gross) as follows: pastoral, £18,044,335; agriculture, £15,863,087; farmyard and dairy, £14,323,741; forestry, fishing, and trapping, £1,647,090; minerals, £1,793,649; total, primary production, £51,671,902 gross value, £44,335,774 net value; manufacturing production, £134,043,170 gross value, £54,043,690 net value. The percentage of unemployment among trade unionists was 9·6 in the second quarter of 1937, against 10·6 in the second quarter of 1936. Total unemployment in the State was estimated at 26,000 in Oct. 1937, a decline of 4,000 since the previous October.

The 1936–37 budget showed an actual surplus of £21,000, instead of an estimated deficit of £110,000. Revenue for 1937–38 was estimated at £25,162,000 (against £25,116,000 received in 1936–37), and expenditure at £25,151,000 (against £25,095,000). Increases of expenditure or losses of revenue in 1937–38 were ascribed to higher wages and shorter working hours (cost, £350,000), cessation of the Commonwealth special grant (£137,000), an extra 3-months' cost of restoration of salary cuts (£123,000), heavier railway renewals and maintenance charges (£350,000), and falling-off of probate duty (£115,000). The main change in taxation was a cut of 20 per cent. in the rates of unemployment relief tax, at a cost of £320,000. These adverse budgetary factors were offset by an estimated increase of £240,000 in the yield of income-tax, and by other revenue gains. Both expenditure and revenue totals were reduced by the cessation of subsidies to the railways for losses on non-paying lines and reductions in freight charges. An Act of 1936 had provided for this and for a compensating reduction of £30 millions in the railways' capital liabilities. (H. V. H.)

VIENNA, the capital and chief city of Austria. Pop. (1934): 1,874,130. The population shows a slight but steady decline. The industry and banking of Vienna have passed through very difficult times, although as a tourist centre it more than holds its own. Constituted after the War a separate province of Austria, Vienna was reduced in 1934 to the position of a mediatized city, whose burgomaster, however, holds a seat on the Austrian Federal Council, equally with the eight provincial governors.

Fox Photos]

VIENNA. A VIEW OF THE KÄRNTNERSTRASSE

Vienna was the scene of heavy street fighting in Feb. 1934, when many of the great workmen's tenements erected by the Social Democrat Party were severely damaged by shell fire. The Social Democrat Party having been dissolved, a great change came over the administration of the city, which had formerly been in the hands of that body.

VILLAGE COLLEGES AND COMMUNITY SCHOOLS. The first village college was opened in 1930 at Sawston, the second at Bottisham, and the third at Linton in 1937. A fourth, at Impington, designed as a model by Prof. Walter Gropius and Maxwell Fry, is now being built. Four others are proposed for the county of Cambridgeshire, in England, as rural community centres of education and social life, each serving about 10 villages. During the daytime, the village college houses the senior school for children of 11–15 years who come from the villages on foot, cycle, and omnibus, and receive a training in the workshop and garden that fits them for life in the countryside. In the evenings and at week-ends the village college provides a wide programme of adult education, including agriculture, university tutorial classes, music, drama, handicrafts and engineering, domestic arts, physical training, and health. It is also a centre of social activities, and provides a home for voluntary associations and committees, and its playing field of 10 acres is the athletic centre of the district.

Since the institution of village colleges in Cambridgeshire, there is a general tendency throughout England to make the new senior schools in rural districts the community centres for their neighbourhood. 'Though the village college must for some time at any rate remain an ideal to be obtained by private munificence, there is no reason why the village school should not be developed on similar lines as far as possible'. (Board of Education, *Suggestions for the Planning of School Buildings*, 1936.) The Physical Training and Recreation Act, 1937, completes the powers of education authorities to make schools into community centres.

The village college scheme has aroused considerable interest in various European countries, in the various countries of the British Commonwealth, and in the United States of America.

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VIRGIN ISLANDS, a United States West Indian dependency east of Porto Rico, comprising St. Croix, St. Thomas, St. John, and smaller islands; language, English; capital, Charlotte Amalie (formerly St. Thomas). The area is 133sq. m. Pop. (1930 census), 22,012 (a decrease of almost 16 per cent. since 1917, and less than half the early nineteenth-century total). Chief cities: Charlotte Amalie (St. Thomas) (7,036), and Christiansted (3,767), and Frederikstod (2,698) on St. Croix. Under the Organic Act of the Virgin Islands of 1936, administration is by a governor appointed by the President of the United States, and an elected legislative assembly. In the year ending June 30, 1937, imports were $3,819,618 (foodstuffs, fuel oil, machinery and vehicles); exports were $1,040,687 (64·5 per cent. sugar and rum). Sugar production is limited by quota to 5,000 tons annually.

VIRGINIA: *see* UNITED STATES OF AMERICA.

VITAMINS. The known vitamins are designated respectively: A, B_1 (or B), B_2 (or G), C, D, and E. Four (B_1, B_2, C, D) have now been chemically isolated, together with the natural precursor of another. All are determinants of normal physiological activity, each having its own specific functions. All are present in natural foodstuffs, on which, and not on commercial vitamin-concentrates, man should ordinarily rely for their supply.

Vitamin A ($C_{20}H_{30}O$) is derived directly or indirectly from the carotene pigments of plants.

Principal sources: green and yellow vegetables, fish-liver oils, egg-yolk, milk, butter, cream, and cheese.

Functions: promotes growth; necessary for reproduction; preserves structure and functions of epithelial tissues; maintains resistance to infection.

Effects of deficiency: failure of growth, interference with ovulation, night-blindness, dry skin, 'toad'-skin, and infections of eye, nasal passages, throat, lungs, stomach, intestines, skin, urinary tract, and (in females) reproductive tract.

Vitamin B_1 (or B). Aneurin ($C_{12}H_{16}N_4OS$).

Principal sources: yeast, whole cereals, legumes, nuts, green vegetables, eggs, cheese, fish-roe, kidney, liver.

Functions: necessary for carbohydrate metabolism and neuro-muscular efficiency.

Effects of deficiency: lack of appetite, impaired growth or loss of weight, poor digestion, sluggish bowel-action, cardiac disorder, fatigue, nervousness, neuritis, disturbed lactation, beri-beri.

Vitamin B_2 (or G), ($C_{17}H_{20}N_4O_6$); belongs to the flavin group of pigments.

Principal sources: yeast, milk, green vegetables, lean meat, liver, kidney.

Functions: helps to sustain health of skin, mucous membrane of alimentary tract, and nervous system.

Effects of deficiency: failure of growth, sore tongue and mouth, skin lesions, gastro-intestinal inflammations, pellagra.

Vitamin C. Ascorbic acid ($C_6H_8O_6$).

Principal sources: citrus and other fruits, raw vegetables, red pepper, fresh milk, liver.

Functions: reducing agent, playing part in tissue-respiration; preserves tone of blood capillaries; enables cells to form their intercellular cement substance.

Effects of deficiency: hæmorrhages, sallow skin, imperfect dental structure, fragile bones, swelling of joints, unhealthy gums, gastro-intestinal disorder, latent or manifest scurvy, lowered resistance to infection.

Vitamin D. Calciferol ($C_{27}H_{42}O$); obtained from irradiated ergosterol.

Principal sources: direct insolation or artificial irradiation of human body, fish-liver oils, egg-yolk, butter, liver, kidney, irradiated foodstuffs containing ergosterol.

Functions: regulates calcium-phosphorus metabolism; maintains calcium and phosphorus levels in blood; fixes calcium in bones and teeth.

Effects of deficiency: defective bone and tooth formation, fragility and softening of bone, bone deformities, rickets, dental caries, tetany, muscular weakness, difficult labour due to deformed pelvis, tendency to respiratory disease, chilblains.

Vitamin E. Chemical structure not definitely known.

Principal sources: wheat-germ oil, whole cereal grains, lettuce, watercress, molasses, vegetable oils.

Functions: maintains placental function in females and germ cell maturation in males.

Effects of deficiency: sterility, foetal death, habitual abortion. (*See* NUTRITION.) (R. McC.)

VOCATIONAL GUIDANCE. The purpose of vocational guidance is to discover the fitness of individuals for various occupations, and to give suitable advice. It may profitably be contrasted with vocational selection, the aim of which is to advise employers concerning the relative merits of various candidates for employment, promotion, or training. Both these procedures utilize tests, questionnaires, and interviews, but have different objectives. In vocational guidance, the chief aim is to satisfy the applicant; in vocational selection, the employer. This leads to a difference in technique, since most individuals seeking vocational guidance voluntarily reveal many of their defects, while in vocational selection this frankness cannot reasonably be expected.

The vocational adviser's aims are: (1) to collect all data relevant to the particular vocational problem of the individual concerned; (2) to impart, in language suitable to the candidate, the relevant knowledge; (3) to interpret the data about the candidate in the light of the adviser's knowledge of requirements and opportunities in the professions and trades; (4) to formulate suggestions to the candidate or his parents; (5) to persuade them to accept an apparently desirable course of action.

The adviser surveys the candidate's financial, social, geographical, and other circumstances, his bodily make-up, dress, speech, and manners, his level of intelligence, his special aptitudes, abilities, and interests, and compares these data with special reports about the demands upon the candidate's abilities likely to be made by different occupations. Variations between the techniques of different vocational advice organizations (in the United States and Britain at least), are, comparatively speaking, not great, though very different emphasis is placed upon the significance attached to tests.

The Use of Tests.—Most tests are intended to investigate general intelligence or certain special aptitudes; *e.g.* mechanical ability. Tests for interests and dispositions are easy to devise, but difficult to interpret at present. Many experienced advisers use tests with great discretion, regarding them as very valuable supplements to information obtained in more direct form. It is important to emphasize this point, since some sweeping assertions which have been made about the success or failure of vocational guidance, are really about the success or failure of the tests taken by themselves.

Psychological methods for vocational guidance are extensively used in the United States, Great Britain, Germany, France, the U.S.S.R., Switzerland, Italy, Spain, the Scandinavian countries, Holland, Belgium, Australia, Africa, China, Japan. Obviously, the different political, economic, and other aims and ideals of these countries determine, to a certain extent, the aims and methods of vocational guidance used in them. Considering the relative newness and heterogeneous personnel of the vocational guidance movement, the work is already well documented, especially in the book by Keller and Viteles.

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VOCATIONAL TRAINING: *see* TECHNICAL EDUCATION.

W

WAGES AND HOURS. In Great Britain money rates of wages over industry as a whole have varied comparatively little in recent years. The effect of the world depression had been, by 1933, to reduce the general average of wage-rates by about 5 per cent. below the level of 1929. These reductions had been approximately cancelled by the end of 1936; and in 1937 wage-rates rose slowly to 4 or 5 per cent., on the average, above the 1929 level by the end of the year. These figures, however, take no account either of changes in the cost of living or of variations in actual earnings in times of good and bad trade. Nor do they take account of the effects of the migration of workers to different employments, which may be better or worse paid; but this factor, important in the long run, is not very significant over short periods.

During the world depression prices fell very greatly, and the prices of foodstuffs were especially affected. This reacted on the cost of living, so that real wages for full-time employment rose substantially, even when money wages were being reduced. They were actually 11 or 12 per cent. higher in 1933 than in 1929. But in the recovery, especially from 1936, the cost of living rose faster than money wages, so that by the autumn of 1937 real wages for full-time work had been appreciably reduced. By November the cost of living was 60 per cent. above the level of 1914, as compared with 36 per cent. in the middle of 1933.

As against the fall in the purchasing value of wage-rates, employment had improved, so that there were more workers in employment and a larger proportion of them working a full standard week, or even overtime. The effect of these changes cannot be statistically measured, but they were considerable in certain trades, at any rate until the autumn, when some tendency to recession appeared (*see* Labour). Approximately, the workers in Great Britain were probably, on the average, from 6 to 7 per cent. better off in purchasing-power at the end of 1937 than in 1929. This, of course, does not apply to South Wales, or other depressed areas.

Over the world as a whole, price changes have played an important part in varying during the last few years the level of real wages. There is great difficulty in securing comparable statistics for different countries, either for money wages or for the cost of living; and, both absolutely and comparatively, the figures in the accompanying tables should be regarded as only approximate. In respect of money wages, some countries compile their figures in terms of wage-rates, and others in terms of actual earnings. Figures of hourly earnings can, however, be treated as roughly comparable with figures of rates. Measurements of the cost of living differ considerably in scope, some being based mainly or exclusively on food prices, whereas others take account of rent and other forms of expenditure. In the two tables dealing with money and real wages, the figures used are those cited by the International Labour Office as reliable enough to be used for approximate comparisons.

It will be seen that, by 1932, money wages had been reduced in most countries included in the table, but that there had been small increases in France and Scandinavia, and a very large increase in the U.S.S.R. Real wages for full-time work had, however, risen in all these countries (except that no measure of real wages is possible for the U.S.S.R.). By 1936 money wages had regained the pre-slump level in Great Britain, and advanced beyond it in the United States, and a long way beyond it in France. In Scandinavia there had been little change; and wages were still much below the 1929 level in Germany, Italy, and Japan. In terms of real wages, France and the United States made the best showing, with advances of more than 20 per cent. above 1929, and Great Britain and Sweden also showed considerable advances. In Germany, on the other hand, real wages (even apart from the shortage of actual supplies at the controlled prices) were still below the 1929 level, and in Japan there had been a much larger fall.

Money Wages—Index Numbers (1929 = 100)

	1932	1935	1936	1937
Great Britain (weekly rates)	96	97	100	103 (June)
France (daily rates) . .	104	99	114	—
Germany (hourly rates) .	82	79	79	—
U.S.A. (hourly earnings) .	84	102	105	120 (June)
Japan (daily earnings) .	85	88	88	93 (June)
Italy (daily earnings) .	86	83	86	107 (June)
Sweden (hourly earnings) .	101	101	101	—
Denmark (hourly earnings) .	102	104	105	105 (March)
U.S.S.R. (monthly wages) .	150	240	—	—

Real Wages—Index Numbers (1929 = 100)

	1932	1935	1936	1937
Great Britain . . .	110	111	111	111 (June)
France	107	117	124	—
Germany	104	99	98	—
U.S.A.	108	123	123	135 (June)
Japan (1932 = 100) . .	100	94	92	93 (June)
Italy	104	108	104	117 (June)
Sweden	110	108	109	—
Denmark . . .	114	105	105	103 (March)

It is difficult, with the figures so far available, to say much about the developments in various countries in 1937. In the United States there were considerable wage-advances in the early part of the year, involving large gains in real wages. Italy, too, shows a rapid rise, which is not very easy to account for in face of a large rise in prices. On the other hand, in both Great Britain and the Scandinavian countries there was undoubtedly some tendency in 1937 for real wages to decline.

In recent years, hours of labour in Great Britain have been subject to very little change. Standard hours of labour in most manufacturing industries are 47 or 48 per week—47 in the engineering, and 48 in the textile trades, for example. Coal miners work a shift of seven and a half hours, plus one winding time, averaging a further half-hour. Dockers work an eight-hour day, and railwaymen a 48-hour week. Builders average, over summer and winter, from 44 to 45 hours a week. Municipal employees vary from 44 to 48 hours. All these figures are exclusive of overtime, which is usually paid for at a higher rate.

In the United States the working week was, until the New Deal, usually longer than in Great Britain. It is now in most trades definitely shorter. The 40-hour week has been established in a large number of industries, including building, engineering, and printing; and some trades (*e.g.* bakers and furniture workers in New York) work only 35 hours. On the other hand, hours are not uniform over the whole country; and transport workers mostly work 45 or 48 hours.

In France, until 1936, the 48-hour week was in force in the majority of industries; but in 1936 and 1937 the 40-hour week was applied by decree to most of the major occupations as a result of the great strike movement of 1936. When the Blum Government was replaced by that of M. Chautemps in 1937, the employers, supported by some of the Radicals in the Cabinet, demanded a reversal of the Blum decrees; but in face of strong resistance from the Trade Unions and from the Socialist members of the Government, only minor modifications had been made up to the end of the year. These, for the most part, do not withdraw the 40-hour week, but only introduce greater elasticity into its working (*e.g.* on the railways).

Of other important industrial countries, Sweden and Denmark, and also Switzerland, Holland, and Belgium work mainly a 48-hour system, with shorter hours in certain trades. In Poland the standard hours vary by district from 46 to 48. Canadian hours vary greatly, both by trades and by areas, with from 44 to 50 hours as the most usual limits. Australia has for most organized trades a 44-hour week; but some transport workers work 48 hours. New Zealand has established a 40-hour week in many trades. No statistics are available for normal hours in either Germany or Italy.

The standard hours of labour differ considerably in certain cases from the average hours per week actually worked. In the United States in 1937 actual factory hours averaged from 39 to 41 per week, and in France, despite the 40-hour week, two-thirds of the workers covered by official returns were actually working, on account of overtime, more than 48 hours. It is possible to give some figures of actual hours worked for countries which publish no statistics of normal hours. Thus in Germany, factory hours in 1937 averaged seven and a half per day, as against seven in 1932 and rather over seven and a half in 1929. In Italy, hours in 1937 averaged 166 per month, as compared with 182 in 1929 and 169 in 1932. In Japan, both in 1929 and in 1937, the usual factory hours actually worked were from nine and a half to ten per day.

Thus, quite recently, the United States has drastically reduced both the normal and the actual working week, and France has drastically reduced the normal week without a corresponding fall in actual hours worked—though even these have been reduced by about 17 per cent. since 1930. In most other countries there has not been much change recently in the length of the working week; but the considerable reductions made in 1919 have usually been maintained.

The question of working hours, however, cannot be adequately considered entirely by itself. In Great Britain at any rate there has been in recent years a great average increase in the time taken in getting to and from work. This is an inevitable consequence of the growth of cities and of the spread of urban populations over a wider area. It constitutes, for many workers, a substantial addition to the length of the working day, and has added impetus to the movement for shorter working hours. But the employer, when he finds it necessary to yield to the demand for a shorter working week, naturally endeavours to check the consequent rise in costs by more intensive use of labour during the reduced hours of employment. The growing mechanization of industry makes this easier, by transferring the control of the pace of work increasingly from the individual worker to the machine—or the power plant. The worker must either adapt himself to the pace set by the machine, or seek other employment. Even when the pace cannot be determined in this way directly by the speed at which the machines revolve, a similar result can be secured by means of squad work, in which each individual must adapt himself to the pace of the group as a whole. These conditions of speeding up, closely associated in the workers' minds with the 'Bedaux' and other systems of 'efficiency engineering', have come to apply very widely in the industries engaged in mass-production of consumers' goods; and somewhat similar methods have been adopted extensively in coal-mining, iron and steel manufacture, and other basic industries. They give rise to frequent complaints that older men, on regaining a job after a long spell of unemployment, find themselves unable to stand the pace and the changed technical conditions of work, and often slip back into unemployment, and are discarded in favour of younger and more adaptable workers.

In view of these conditions of additional travelling time and greater intensity of labour, the shortening of the working week in most occupations since 1914 has not been unmixed gain. Nevertheless, it has considerably enlarged the workers' opportunities of leisure—for even if work has come to demand greater intensity of effort, the demand made on the worker is more often for nervous than for muscular energy, and does not result in the same sort of weariness at the end of the working day. This change in the character of the labour process, especially in the newer industries, may have a close connexion with the increasing demand for amusement, of which there is evidence in the very rapid increase in the numbers employed in the amusement industries.

In general it has been found that, in the more highly mechanized trades, the reduction of the hours of labour has involved, in the long run, little or no increase in labour costs, or has even been accompanied by a reduction. It has, however, led to an increased adoption of the shift system, in order to spread the capital costs over a larger volume of output. Shorter hours have led to increased costs chiefly in trades concerned, not with production, but with the rendering of services, and, in the case of manufactures, in trades in which the state of demand has not permitted total output to be increased by the adoption of the shift system. Even in the services, however, it has sometimes—on the railways, for example—been found possible to make large economies in the use of labour, and by this means to counteract the rise in costs resulting from a shorter working day or week.

Wages and hours are, of course, closely associated; the employers' ability to pay wages being in practice conditioned by the number of hours for which he is able to keep his labourers at work, and also by the extent to which, especially in certain highly mechanized trades, he is able to spread his capital costs over a larger volume of output by means of the shift system.

The movement for the 40-hour week as a means of reducing unemployment received a considerable impetus during the world slump, and was taken up actively by the International Labour Organization. In face of the opposition of most of the employers' groups and of some Governments (including the British), an International Draft Convention laying down the principle of the 40-hour week was adopted by the I.L.O. in 1935; but this still remains unratified by any important State. Subsequently, more detailed Conventions have been adopted, applying the 40-hour week to particular industries, and also proposing the reduction of hours to less than 48, but more than 40, in a number of other industries. But these also remain for the most part unratified by the States concerned. The British Government, despite Trade Union demands for a general 40-hour working week, has taken up the attitude that the question should be dealt with by separate negotiation between the employers and workers in each industry and not by general legislation.

Closely connected with the movement for a shorter working week is the demand for the general adoption of 'holidays with pay'. A draft Convention providing for this reform was adopted by the I.L.O. in 1936, but has not been ratified so far by any country. But France, Belgium, and Norway passed in 1936 Acts establishing the system on a compulsory basis; and the general enforcement of payment for holidays has been under consideration in a number of countries. There is provision for the system in both Germany and Italy; and in the U.S.S.R. it ranks as one of the 'fundamental rights' laid down in the new Constitution of 1937. In other countries many collective agreements include the right to paid holidays, and there has been a considerable extension of the system during 1937. In Great Britain a Bill for the compulsory establishment of paid holidays was carried by the House of Commons on second reading; and the Government thereupon set up a Committee to investigate the matter with a view to possible legislation. It was estimated officially in Great Britain that in 1936 about 1,500,000 wage-earners, as distinct from salaried employees, were already entitled to paid holidays under agreement, the provision varying from 3 to 12 days, after from 6 to 12 months of continuous employment. Since then a large number of additional firms have conceded paid holidays in some form.

Undoubtedly the demand for 'holidays with pay', which has been actively taken up by the Labour Party, arouses general enthusiasm among the workers; and it seems fairly certain that payment for holidays will before long become a statutory right in Great Britain and most other industrial countries. (G. D. H. C.)

WAKE ISLAND, a possession of the United States of America, lies in mid-Pacific in lat. 19° 15′ N., long. 166° 38′ 15″ E. It is about 2,130 miles west of the island of Hawaii and 1,290 miles north-east of the island of Guam. It is a typical coral atoll of three small islets enclosing a shallow lagoon; total land area, about 2,600 acres, much of which is from 10 to 15ft. above sea-level. Pan-American Airways have permission to maintain temporary facilities there in connexion with their commercial trans-Pacific flight operations. It is the nesting-place of innumerable birds, including albatrosses, frigate birds, terns, boatswain birds, and snipe, all of which are protected.

WALES, principality forming part of Great Britain, to the west of England and north of the Bristol Channel, consisting of twelve counties, to which for administrative and statistical purposes Monmouthshire is usually added; governed as an integral part of the United Kingdom, it sends 36 members to the British Parliament. Capital, Cardiff.

Area and Population.—Area (including Monmouthshire); 8,016sq.m. Population (census 1931): 2,593,014 (density 323 per sq.m.).

Religion.—The (Protestant Episcopal) Church of England in Wales was disestablished 1920, and reorganized as a separate archbishopric, its temporal interests being confided to a 'Representative Body'. It has 194,000 communicants. The Calvinistic Methodist (181,000 members) and Congregational Churches are the largest non-episcopal bodies.

Language.—English; but in 1931, 77,932 persons spoke Welsh only; 811,329 (31 per cent.) spoke both languages.

Educational System.—*See* Great Britain. The University of Wales, with colleges at Aberystwyth, Bangor, Cardiff, and Swansea, has some 360 professors, lecturers, etc., and about 3,200 students.

Leading Cities.—Cardiff, population (1931) 223,589; Swansea (164,797); Rhondda (urban district) (141,346).

History in 1937.—There were no by-elections during the year, but a vacancy was created in the Pontypridd division of Glamorganshire by the death, on Nov. 25, of Mr. D. L. Davies (Lab.), who had been returned unopposed at the General Election in 1935. On Jan. 19 three leaders of the Welsh Nationalist Party, which seeks Dominion status for Wales, were convicted and imprisoned for setting fire, in the previous September, to an aerodrome at Penrhos, the erection of which they considered contrary to Welsh national interests.

WALKING. In the walking world, the year 1937 has been distinguished by the breaking of every officially recognized world's record at metric distances from 3,000 to 25,000 metres. The outstanding walker has been J. Mikaelsson, Sweden, who made six new metric records and still holds five of them. He is 22 years of age, and made his first record by walking 5,000 metres in 21mins. 49secs. He then won the English 7-miles title in 50mins. 19·2secs., and followed that new mileage record up with further records of 3,000 metres in 12mins. 53·8secs.; 10,000 metres in 44mins. 8secs.; 15,000 metres in 1hr. 8mins. 37secs.; 20,000 metres in 1hr. 31mins. 47secs.; and 25,000 metres in 1hr. 57mins. 31·6secs. Mikaelsson did not go through the season without suffering a defeat, and his 10,000 metres record has been eclipsed by Bruun, Germany, walking the distance in 43mins., 25·2secs., and Rundolf, Germany, 43mins. 54·6secs. Best performances, not constitut-

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HAROLD WHITLOCK, THE OLYMPIC CHAMPION, WINNING THE LONDON TO BRIGHTON WALK FOR THE FOURTH YEAR IN SUCCESSION ing world's records, at other metric distances this year have been: 30,000 metres, Bleiweiss, Germany, 2hrs. 30mins. 46secs.; 50,000 metres, Segerstroem, Sweden, 4hrs. 31mins. 12secs.; 67,000 metres, Malmquist, Denmark, 7hrs. 5mins. 24secs.; 80,000 metres, Champion, France, 8hrs. 31mins. 47secs.; and 12,569 metres in 1hr. by Schwab, Switzerland.

Fifty thousand metres (31miles 121yds.) is the official distance of the Walking Championship at the Olympic Games, which title was won in 1936 by H. Whitlock, Great Britain, in 4hrs. 30mins. 41·4secs., which is 30·6secs. faster than the time returned by Segerstroem. Whitlock walked 50,000 metres only once in 1937, when he won the R.W.A. title very easily. His time was 4hrs. 38mins. 43secs., which placed him fifth in the 1937 world rankings. But his record time for this distance was beaten on Oct. 3 by the Alsatian, Sibert, who, during a walk from Dijon to Beaune, covered 50 kilometres in 4hrs. 24mins. 54secs. (F. A. M. W.)

WARBURG, FELIX M. American financier and philanthropist; born of Jewish parents in Hamburg, Germany, Jan. 14, 1871; died in New York, Oct. 20, 1937. Going to the United States in 1894, he joined the banking firm of Kuhn, Loeb and Company, of which he ultimately became senior partner. He was naturalized in 1900, and in the years following became increasingly active in the field of social service. He was especially interested in Jewish social work, being head of the federation for support of Jewish philanthropies established in 1917 and championing co-operation between agencies of varied faiths. While not a Zionist, he worked for a better understanding between Great Britain, Arabs, and Jews, and hoped Palestine might prove a Jewish cultural centre and a refuge for oppressed people of every race. He was associated with such projects as the Fogg Art Museum of Harvard University, the Museum of Science and Industry of New York City, the New York Stadium concerts, the Institute of Musical Art, and the New York Philharmonic Society; and, in England, with the Warburg Institute.

WARFARE. For nearly a century the trend of the technical conditions of warfare has given a growing advantage to the defence, and has tended to discount a superiority of numbers on the part of the attacker. This advantage of the defence was created by the introduction of the breech-loading rifle, which enabled the firer to remain under cover while those who sought to attack him had to expose themselves in advancing. It became still more marked when the magazine rifle increased the rate of fire, and was intensified with the advent of the machine-gun. The defensive thereby became supreme, buttressed by trenches and barbed-wire entanglements. The effect has been to make decisive results in war far more difficult to attain, save against forces who lack modern equipment, and to reduce the chances of successful invasion. Unless a decisive advantage is gained in a short time, deadlock is likely to develop earlier than ever, and to be established more firmly—unless the endurance of the defender be undermined by internal disturbance or shortage of supplies.

In so far as these conditions become recognized, they should tend to be a check on war. At present they have only been recognized far enough to make would-be aggressors more conscious of the importance of hastening their stroke and seeking an initial surprise. The creed and organization of the Totalitarian State facilitates this purpose, if they also carry with them a tendency to mass effects which runs counter to the increasingly qualitative trend of warfare.

Fox Photos]

BREN ANTI-AIRCRAFT GUN BEING USED DURING A DEMONSTRATION OF MODERN INFANTRY TRAINING AT ALDERSHOT

To its devotees, the totalitarian principle demands that in war a nation should place everything at its service; and, in peace, at the service of the next war. This picture of the way that a totalitarian war will be waged has been shown in many recent writings, among which Ludendorff's *The Nation at War* is perhaps the best known abroad. Action should open without a declaration of war—in case the people of the nation which declares war should feel any guilty sense of being the aggressors. Within a few hours of the decision to make war the air, land, and sea striking forces must reach their full war readiness. The rest of the air and naval forces will complete their mobilization by the second day; and the rest of the land forces, a few days later. Hostilities will have already begun with the despatch of the mechanized divisions near the frontier to force an entry into the enemy country. On the seas the surface and submarine attack on the enemy's commerce will coincide with this opening stroke. The main land advance may begin a little later, because of the masses that will have to be brought up, and these will have to come by rail, since motors will be inadequate to carry the numbers. But by the end of the second week of war operations will be in full progress everywhere. Battle will follow till the enemy is finally crushed, or till reserves of men and material run out. The air force must first be used to help in beating the opposing army; only then will the army be able to act with its air force against the enemy country in rear. For this school, the land battle is still a process in which the infantry is helped forward by artillery, machine-guns, mortar and tank support, until it overwhelms the enemy in a man-to-man fight. Furthermore, 'attack is always the deciding factor in battles'. All movements should lead to battle; mechanization simply quickens its delivery.

This emphasis on battle is not due to any moral objection to striking direct against the enemy people—to quote Ludendorff again, 'the demands of totalitarian warfare . . . will ever ignore the cheap theoretical desire to abolish unrestricted U-boat warfare'. And aircraft will now combine with submarines in sinking every vessel which tries to reach the enemy's ports, even vessels sailing under neutral flags. Likewise on land a time will come 'when bombing squadrons must inexorably and without pity be sent against the people in the enemy country'.

But on military grounds, which are the ruling considerations, that time should normally be delayed until the battles have been won. Ludendorff declares that technical means are becoming ever more important, yet clings to the old belief that strength lies in numbers—' it is a fact that victory " goes to the big battalions " '. Hence ' the totalitarian war demands the incorporation in the army of every man fit to bear arms '. It is clear that the faith of the totalitarian militarists is built on traditional military theory.

It is worth while to approach the problem of future warfare along this path, because it is a guide to the outlook which still prevails in the War Ministries of Europe. The general trend of the rearmament race now in progress fosters it by piling up numbers, and by feeding the military chiefs with more means than their minds can assimilate.

Mechanization has given the General Staffs a new ground for belief in mobile warfare—the picture to which armies always revert in peacetime. Despite the resistance which they everywhere offered to the idea of mechanization, now that they have embraced it, they build expectations on it which dumbfound a sober, and more long-standing, advocate of this development. In many countries they have burst out into prophecy that trench-warfare is a thing of the past, and that the wars of the future will be fought and finished with a quickness hitherto unknown.

There is little doubt that the new mechanized divisions will be used in the first hours of war with the aim of penetrating the enemy's frontier and opening the way for the subsequent general advance. All the General Staffs are trending towards this new picture. They no longer think of waiting, as in 1914, until the main strength of the armies has been assembled. But there is reason to doubt whether this mechanized spearhead will produce the decisive advantage which is sought. For obstruction is the natural antidote to the power of delivering mobile strokes which mechanization has revived. By utilizing rivers, canals, and railways as barriers, by demolishing bridges and blocking defiles, the defender may go far to nullify the new menace. Moreover, mechanization itself enables the means of obstruction to be moved more swiftly to any threatened spot. Despite the apparent advantage that mechanization has brought to the offensive, its reinforcement of the defensive is likely to prove greater still.

The prospects of this initial stoke by the mechanized forces are bright compared with those that await the main masses of the European armies. There is little ground for expecting that these will make more impression on the defence than in the last war. The main weapon that then stopped them was the machine-gun; there is now a far higher proportion of machine-guns, light and heavy, in all armies. The weapon on which the attackers mainly relied to overcome the defending machine-gun in the last war was artillery: at the outset of another, no army could expect to have the same amount of artillery as in 1918. Even if this could eventually be increased to the former scale, it is a weapon that, when used in mass, tends to block the path of the infantry it is trying to help. By ploughing up the ground, it acts as an automatic military brake. Armour, in the form of the tank, proved a better means in the last war of helping the attack forward; but armour used in direct assault against organized defence would now seem to have lost much of its value through the great and widespread development of armour-piercing weapons—there are now highly efficient anti-tank machine-guns, and even rifles, as well as guns. There are greater possibilities in the skilful use of obscurity as a cloak to the attack. Fog, natural or artificial, and darkness are the best antidotes to the defensive machine-gun. But the level of training required for effective operations in obscurity is difficult to attain during peacetime in mass armies raised by conscription. Moreover, the defence may find adequate means of turning darkness into daylight, and of dispersing fog or smoke.

A greater question that affects these mass armies is whether they will ever reach the battlefield. Their approach must be made by roads and railways; they will crowd these arteries which now, for several hundred miles back, lie under the menace of air attack. Their immense demands in food and ammunition supply require a continuous circulation along these arteries; thus the strain is maintained all the way back even when the armies themselves have passed on. To gauge what might happen, it is worth studying the process of mobilization and assembly in 1914. Despite

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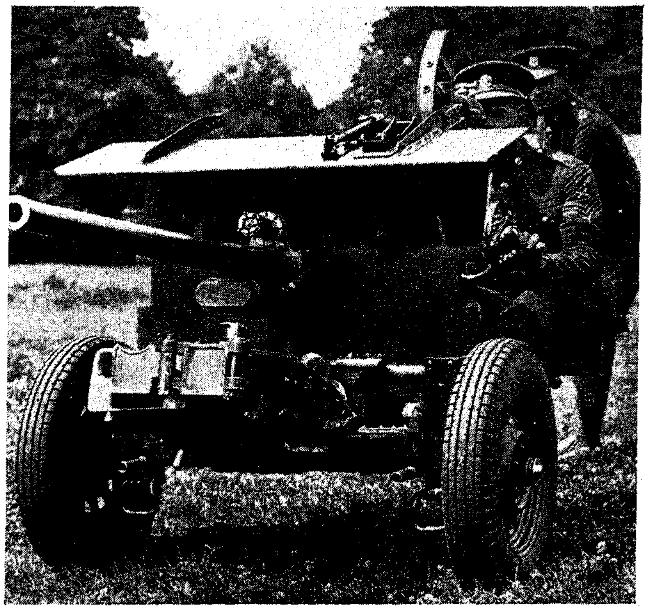
ANTI-TANK RIFLES IN POSITION ON THE ROADWAY DURING A DEMONSTRATION AT ALDERSHOT all the care devoted to its machinery, there were hitches which caused serious trouble, and threatened worse. Yet in 1914 there was no interference from the enemy such as is certain to-day through the intervention of air power. The complexity and delicacy of the process of mobilizing and moving forward an army is such that a mere touch may well suffice to cause its collapse. The larger the army the more susceptible it will be to dislocation—because the greater will be the congestion of all the traffic arteries.

If the opponent should employ mustard gas, the paralysis of war is still more probable. For in the fighting zone mustard gas is most effective as a defensive blocking agent. It forms the most impassable, if invisible, barrier to advance, especially advance by armies composed of infantry; while in the rear zone it is essentially a dislocating agent. But mustard gas is not necessary to produce this stagnation. Machine-guns and demolitions should suffice to stop an advancing army; air bombs acting on inherent congestion behind should suffice to prevent it remaining where it has stopped. Blocked in front, the mass army is likely to break down in rear. If the maintenance of such armies is straining the resources of the nations in peace, in war the attempt to use them threatens national bankruptcy.

The attempt to seek victory in battle at sea has hardly more promise. There is no need to assume that the battle fleets will be bombed to destruction. The battle fleets of the last war were deterred from meeting each other by the menace of the submarine and the mine; such a paralysing effect would seem more likely than ever now that to these weapons is added the new threat of shore-based aircraft, and torpedo-carrying speedboats. It is worth notice that almost all the naval battles of history have been fought within present-day air range from a coastline. By contrast, these new agents—which can all be classified as 'light craft'—promise to increase their potentialities of direct attack on sea communications, avoiding battle. Such guerrilla war at sea bulks large on the horizon of future war. It affects, not only the possibility of transporting large land forces overseas, but that of maintaining the supply of the armies which are there.

In the air, similar conditions prevail. It is difficult to bring the opposing air forces to battle, because the three-dimensional spaces are so vast and speeds so high. It is simpler, far simpler than it has ever been on land, to strike direct at the sources of the enemy's power without first defeating his forces. The complex web of a modern nation's commerce and industry, its administration and supply, offers a target as sensitive as it is large. Externally, the flow of its supplies may be more easily reduced to stagnation now that its trade-routes, and their approaches to port, are threatened by shore-based aircraft and other new agents of interference. One deduction we may draw is that the larger the armies that a country should attempt to send overseas, the more difficulty it will have, not only in maintaining them, but in maintaining itself. A corollary is that the first attention should be given to the reduction of national vulnerability, rather than to the creation of armies. Every means of diminishing and dispersing targets, and also of decreasing their sensitiveness, should be studied and sought. And the mental preparedness of the people is as important as the provision of material defences.

The positive forms of defence involve questions to which the answer is less sure. The power of evasion possessed by aircraft, and increased by their increasing speed, has been a justification for the view that in the air, as contrasted with the land, the attack was superior to the defence where it was aimed direct at ground targets. This view was defined in Mr. Baldwin's famous phrase—'The truth is that a bomber will always get through'. The result has been that the nations, whether their intentions were aggressive or purely self-protective, have tended to place their main reliance in large bombing forces. A country attacked would thus be ready to respond with an immediate counter-offensive, directed, not against the enemy's air forces, but against targets in his territory.



Fox Photos]

AT THE SMALL ARMS SCHOOL, NETHERAVON, WILTS. HANDLING THE NEW TWO-POUNDER ANTI-TANK GUN

But recent experiences in Spain and China, while confirming the aircraft's power of evasion, has suggested that its destructive effect has been overestimated, at least where there is sufficient opposition to prevent an undisturbed approach and aim. While anti-aircraft artillery may not have scored a very much higher proportion of hits than in the last war, it has shown its value in preventing the bombers achieving the hits they intended. Aircraft used defensively for interception have had varying success, but sufficient on the whole to emphasize the question how far the value of bombing attacks balances their risks wherever the defence is proportionately strong. It would seem clear that, although defence is not yet master of attack in the air, the deterrent influence of its presence is far more powerful than its actual effect, while the effect attained by the attack decreases disproportionately with the multiplication of defensive means. (B. H. L. H.)

WARFIELD, MRS. WALLIS: *see* WINDSOR, H.R.H. DUKE OF.

WARSAW (Pol. *Warszawa*; Fr. *Varsovie*; Ger. *Warschau*), province and capital city of Poland.

The city, 315 miles E. of Berlin, on the W. bank of the Vistula, connected by four bridges (two railway) with Praga, its eastern suburb, is mainly modern and spacious.

Area: 47sq.m.; population (1931): 1,178,914 (833,500 Polish-speaking)—1937 estimate: 1,225,451.

It is the seat of a Roman Catholic archbishop and the Metropolitan of the autocephalous church, a centre of thriving manufactures, of commerce (exporting corn and flax), and of education; the Don University had (1935–36) 9,050 students, the free university and academies, 4,494.

There are two main railway stations (and two in Praga), an airport and broadcasting stations. The removal (June), by administrative order, of Pilsudski's coffin from St. Leonard's crypt to another vault in the Cathedral caused controversy, afterwards reconciled.

WASHINGTON : *see* United States of America.

WASHINGTON, District of Columbia, U.S.A.; population (July 1, 1937) 627,000, an increase of nearly 30 per cent. since 1930. A notable contribution to supplement the regional plan of 1926 was the publication in 1937 of the report on the Baltimore–Washington–Annapolis region. These three cities, once separated by 30 or 40m. of forests and rural clearings, are now part of an expanding urban and suburban region. The regional plan for Washington is slowly being realized. The much-travelled Mount Vernon Memorial highway to the home of George Washington will shortly be extended from the Arlington Memorial bridge to the Key bridge. This and the Leiter property, acquired by gift, comprising 167 acres and a mile and a half of shore front, are parts of the George Washington Memorial parkway, which will include both sides of the Potomac river from Mount Vernon to Great Falls. Within the District of Columbia, it is now possible to drive through a parkway along the Potomac river and Rock Creek park from Haines Point to the District line, a distance of more than 10 miles. The recently completed Piney Branch parkway adds to the park drives and the extension of the Rock Creek parkway into Maryland serves both the district and Maryland. With emergency funds, many of the parks of Washington have been rehabilitated and replanted. Meridian park on Sixteenth street has finally been completed. With Civilian Conservation Corps labour Fort Du Pont park, situated on the partly completed Fort driveway which will one day traverse the hills surrounding the city to connect the old Civil War forts, has made accessible a large area of picturesque native scenery. Civilian Conservation Corps labour has also made possible the restoration to its natural state of Roosevelt Island, lying in the Potomac river between the Arlington and Key bridges, as a memorial to Theodore Roosevelt.

Public Buildings.—The Apex building, to be occupied by the Federal Trade Commission, the Archives building and the National Gallery of Arts will complete the Capitol end of the famous triangle of public buildings. In 1937, the new Department of Interior Building was completed and occupied. It faces Constitution avenue, where the new Federal Reserve building lines up with the National Academy of Sciences and the Public Health building to create an impressive avenue. In the Capitol group, the new Supreme Court, a new House office building and an extension to the Senate office building are occupied. The Library of Congress annexe is nearing completion.

Housing.—The Public Works Administration built Langston Terrace, a project for coloured people, overlooking Anacostia parkway. Four large-scale housing projects, erected under the Federal Housing Administration's plan to aid private enterprise, are located in the Washington region. One of the four greenbelt towns lies 6m. from Washington, and is now being operated by the Farm Security Administration. The Alley Dwelling Authority is ridding the national capital of its 200 inhabited alleys. Two rehousing projects have been completed and two more are under construction.

WATER POWER. The year 1937 witnessed the advent of no important new power sources nor of new means for power conversion. The fuels—coal, oil, and natural gas—together with falling water, continue to furnish the great bulk of power for all purposes. The means of utilizing the power of rivers are unaltered and the development of hydraulic turbines has continued along conventional lines.

Estimates of the amount of developed water power in the world indicate that the total was about 62 million h.p. of installed water wheels for 1936, which appears to have been increased to 63 million or more by the close of 1937. The latest estimates of the total potential water power of the world, based on ordinary minimum flow and 100 per cent. efficiency, indicate a total of about 670 million h.p. However, in comparing these figures with those for developed power, it should be recognized that the estimates of developed capacity are based on installations of water wheels, which average two or three times the potential low-flow power at the sites of utilization.

Although there were many important water-power plants under construction, there were relatively few plants completed and put in operation in 1937. Those reported as completed or under construction and their capacities in horse-power are:

Austria.—Construction was resumed at Persenbeug on the Danube river; 134,000h.p.

Canada.—Of the plants completed with total h.p. 167,000, the Outardes river in Quebec and the Montreal river in Ontario afforded 80,000. There were plants under construction or extensions of old plants, h.p. totalling 50,000.

Ceylon.—The Ceylon Government authorized the construction of the Aberdeen Saxapana hydroelectric plant; 33,500h.p.

Finland.—A power plant on the Skellefte-Alf river was enlarged by 13,400h.p.

France.—The Chambon dam was completed, increasing the annual water-power output at plants on the river below by 110 million kilowatt-hours.

Germany.—Construction of a dam and power plant on the Elbe river at Hohenwarte was in progress.

Great Britain.—The Galloway Power scheme was completed with total capacity of 150,000h.p. at five plants. Installations at the head of Loch Lennhe, Inverness, Scotland, are being increased by 50,000h.p.

Iceland.—A power plant at Ljosafoss falls on the Sag river, of 12,500h.p., was put in operation.

India.—A plant was completed at the Mettur dam on the Cauvery river; 48,000h.p. Construction was started on a plant on the Shimsha river, 27,000h.p.

Irish Free State.—A power plant on the Liffey river at Pollaphuca, County Wicklow, was under construction.

Japan.—A power plant was under construction on the Shinano river in Niigata Prefecture; 300,000h.p.

New Zealand.—Two units, 42,000h.p., were added to the Arapuni plant, making the total capacity 126,000h.p.

Poland.—Three power plants were under construction: Dunajec river, 13,400h.p.; Sola river, 26,400h.p.; and San river, 40,000h.p.

Sweden.—A power plant was completed on the Indakälo river at Krangende, 241,000h.p., and a plant was under construction on that river at Vargön, 17,600h.p.

Switzerland.—Three plants were under construction, Bargis, 35,000h.p.; Trinsermähle, 40,000h.p.; and Isla Pin, 15,000h.p.

Union of Soviet Socialist Republics.—A programme of construction of 20 plants was announced in 1933, scheduled for completion: in 1936, seven plants, 233,000h.p.; in 1937, four plants, 336,000h.p.; in 1938, five plants, 381,000h.p.; in 1939, three plants, 493,000h.p.; and in

1940, one plant on the Kama river near Perm, 423,000h.p. No progress report is available with relation to this schedule. The plant near Perm and two plants on the upper Volga—at Rybinsk and at Uglich—total for the three plants 1,270,000h.p., were under construction. The Dnieper plant after five years of service is to be enlarged next year to 750,000h.p. by the addition of 170,000h.p. A power plant is being installed at Stalinogorsk, 134,000h.p.

United States of America.—The increase, 365,000h.p., in completed water-power plants was divided between new plants, 243,000h.p., and additional units, 122,000h.p. The larger of the new plants are, Bonneville, 120,000h.p., on the Columbia river in Washington; Sutherland, 33,500 h.p., on the north and south forks of the Platte river in Nebraska; Buchanan and Inks dams, 45,000h.p., on the Colorado river in Texas; and the Upper Salmon development, 26,000h.p., on the Snake river in Idaho. A new unit, 115,000h.p., was added at Boulder dam, on the Colorado river, increasing the capacity there to 515,000h.p. Construction was in progress at Fowler Bend dam, initial 80,000h.p., ultimate 160,000h.p., on Hiwassee river; at three plants on the Tennessee river: Guntersville, initial 120,000h.p., ultimate 136,000h.p.; Chickamauga, initial 108,000, ultimate 144,000h.p.; and Pickwick Landing, initial 96,000, ultimate 288,000h.p.; at two dams on the Columbia river: Bonneville in Oregon, initial 120,000, ultimate 600,000h.p.; and Grand Coulee in Washington, ultimate 2,700,000h.p.; at Fort Peck on the Missouri river, initial 94,000, ultimate 141,000h.p.; on the Flathead river in Montana, initial 77,000, ultimate 154,000h.p.; at Boulder dam, on the Colorado river in Arizona and Nevada, present installation 515,000, ultimate 1,835,000h.p.; at Parker dam, on the Colorado river, ultimate 100,000h.p.; at Shasta dam on the Sacramento river in California, initial 375,000, ultimate 470,000h.p.; at Marshall Ford dam on the Colorado river of Texas, initial 45,600, ultimate 68,300 h.p.; at Elephant Butte dam on the Rio Grande, ultimate 26,000h.p.; at the Tri-county development on the Platte river in Nebraska, ultimate 70,000h.p. The total ultimate capacities of these plants is about 6,900,000h.p., compared with 17,120,000h.p., the total developed water power in the United States as on Jan. 1, 1937.

Uruguay.—Contract has been let for a large plant on the Rio Negro, scheduled for completion in 1942. (N. C. G.)

WATER SUPPLIES. In Great Britain, many interesting schemes for improving water supplies are in progress, but of those completed in 1937 the inauguration of the Burnhope Reservoir for the Durham County Water Board is notable, in that with the earthen embankment, which is one of the highest in the country—131ft. above stream bed—was incorporated a bellmouth weir for the discharge of flood water. This is not an unusual device, but, in this case, the unstable condition of the hillside precluded the construction of the originally intended open channel by which the flood water passing the overflow weir gravitated to the river below the base of the embankment: the normal overflow weir having been constructed, the water was led to the bellmouth overflow and dropped into a vertical shaft, and thence through a tunnel to discharge below the embankment. An interesting scheme, still in progress, is the conveyance of water from Loch Treig and Loch Laggan for 15 miles through Ben Nevis to the British Aluminium Works at Fort William, Inverness-shire.

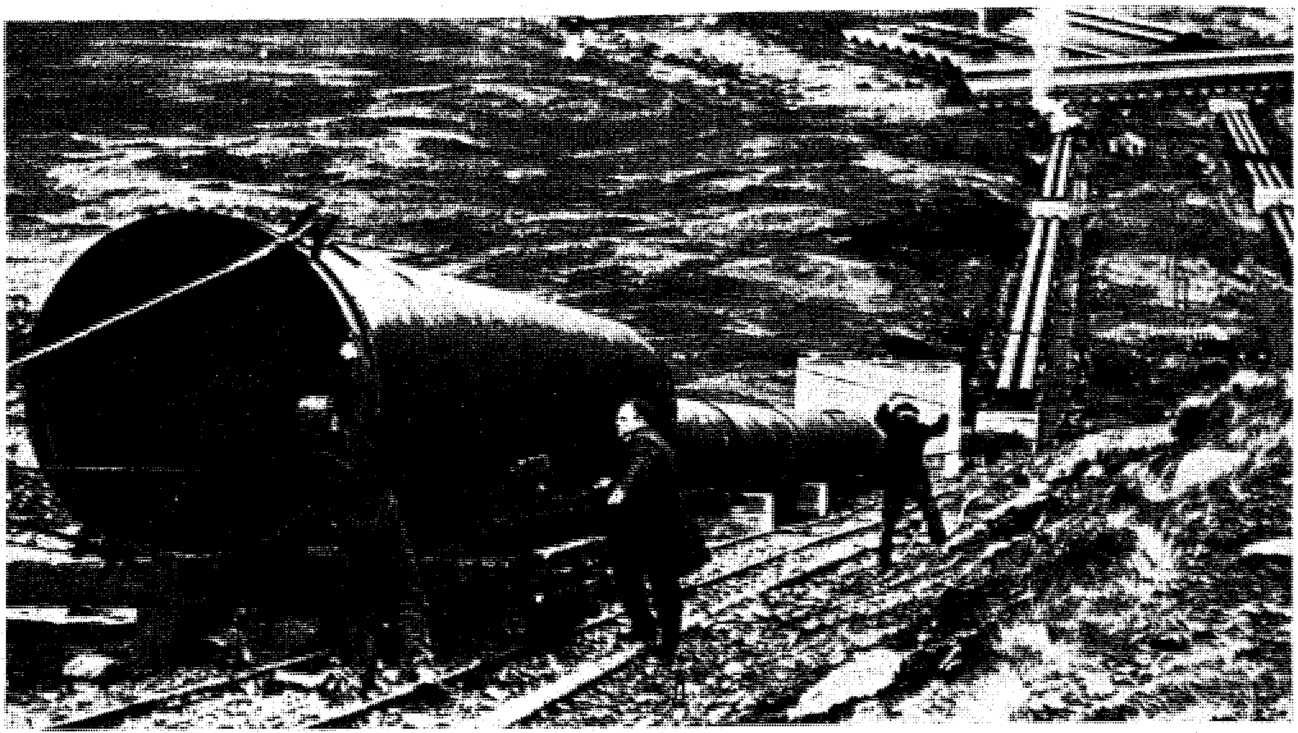
The inauguration of the Shing Mun Valley Scheme, which when fully developed will yield for the supply of Hong Kong (and Kowloon) some 18 million gallons a day, is noteworthy, in that it involved the construction of the Gorge Dam, the highest structure of its type—or, indeed, of any type—within the British Empire (*see* DAMS). It is 275ft. above stream-bed level, has a length at top water level of 700ft., and impounds 3,000 million gallons. It is a composite structure consisting of an articulated watertight rich concrete diaphragm, which, continued below ground, serves as the cut-off trench, and which rests upon and is supported by a massive retaining wall of concrete containing less cement per cubic yard than the diaphragm, and this retaining wall is, in turn, supported by a rockfill embankment which has a maximum base width of over 400ft. As was found at the Boulder Dam, completed in 1936, the loading of the valley bottom with a considerable depth of water led to a compression of the valley bottom with a consequent leaning of the dam in an upstream direction.

By French engineers increasing attention is being devoted to the possibility of utilizing arched dams, *i.e.* dams of concrete in which the curvature is convex towards the reservoir and in which advantage is taken of this shape to reduce the area of the cross section of the dam with consequent economy in the cost of construction. French practice has been directed to the reduction or elimination of the somewhat indeterminate stresses which occur at the base of the structure where the foundations are relatively immovable owing to their being embedded in the bottom and flanks of the valley.

The water-supply resources of New York City and the means by which they are made equal to the ever-increasing demands are matters of general interest. In 1937, the Engineering Report on the Water Supplies of Long Island emphasized the handicap under which the city laboured: the unrestricted pumping by commercial undertakings in an area in which the resources were limited by natural conditions, is shown to be detrimental to the value of this portion of the supply to New York City and, incidentally, a similar position exists in certain parts of Great Britain. The facts were well known to the city, and it was estimated that all available resources would be exhausted in 1940. This has led to the inauguration of what is known as the Delaware River Scheme, by which the city is given the right to develop for water supply a portion of the upper waters of that river within the State of New York, which will mean an addition to the city resources of 450 (Imperial) million gallons a day, and in 1937 a contract was let for the first portion of the 85-mile pressure tunnel which will deliver water into the Hill View reservoir at the northern boundary of the city. In due course, contracts for the construction of impounding reservoirs on the East Branch and Neversink rivers, tributaries of the Delaware river, and on the Rondout Creek, a tributary of the Hudson river, will be let.

Treatment of Water.—In England, the possibilities of contamination or infection of well waters due to the urbanization of rural areas has received particular attention. In the southern part of the country water derived from the chalk formation is one of the most important sources of supply; many wells are located in areas which were of rural character and not liable to contamination, but increasing demands on those wells, with corresponding extensions in the area which has to be drawn upon to maintain the supplies required to meet the growing demands, has added to the liability to contamination of the water, and those responsible for public water are taking precautionary measures such as chlorination, sometimes after filtration, to guard against deterioration in the potable quality of the supply.

In the treatment of water there have been no outstanding



Sport and General]

LAYING PIPE LINES FROM BEN NEVIS TO THE BRITISH ALUMINIUM WORKS AT FORT WILLIAM, INVERNESS-SHIRE. EACH SECTION OF PIPING WEIGHS TWELVE TONS

developments, but a growing tendency to require a softened water in areas which have hitherto been content to use a hard water is to be noted. This softening may be accomplished by what is known as the excess-lime treatment, which itself has some value in sterilization, in which case the whole of the supply is so treated, or by the use of zeolites, in which a portion of the supply is softened to zero hardness so that the resultant hardness of the whole supply is reduced to the desired degree.

Whilst it is not possible to bring forward any really definite evidence that a soft water is better than a hard water so far as health is concerned, such a water has economic advantages in the saving of soap and in industrial usage, and the question is really one of economics; softening adds to the cost of a public supply, and if the community is prepared to pay the bill, there is no reason why all public supplies should not be softened. There is, however, a lower limit, because if the water is unduly soft, then it will be capable of attacking and taking into solution the lead of service pipes, with consequent detrimental effects on the general health, and of causing incrustation in the distribution mains with added expense in renewals. A water with a hardness of 5 to 10 parts per 100,000 will not be liable to attack lead piping nor to cause deterioration in the mains. (H. J. F. G.)

WAZIRISTAN. Turbulence continued during 1937 in this difficult tract on the N.W. Frontier of India; and a large force of British and Indian troops, including 5,000 irregulars, was kept busy coping with the guerrilla tactics of the tribes. The establishment of a powerful cantonment at Razmak was followed by an extension of the protected tribal areas beyond the Tochi Valley, and 100 additional miles of road are being constructed. The position was quieter towards the end of the year, as a faqir of Ipi, who had been active in the attacks on the Indian forces, had been driven out of the Shaktu valley in the spring to take shelter nearer the Afghan border.

WEALTH AND INCOME, DISTRIBUTION OF.

The statement is often made that the rich are getting richer and the poor poorer, and great emphasis is laid upon the immense contrast between wealth and poverty. Writing in 1920, for Great Britain, Sir Josiah Stamp found that there had in fact been little change in the 'slope of distribution' for 100 years (*see Ency. Brit.*, vol. 23, pp. 452–53).

But as regards capital wealth, a recent work (1937) on the change in distribution of capital in Great Britain by Daniels and Campion establishes certain conclusions very clearly. More than half of the total capital in 1924–30 and 1911–13 was owned by persons with more than £5,000 each. The two lowest capital groups include the majority of the population, the capital included being one-sixth of the total in 1924–30. If estates paying fixed duties are separated from others in the group £100–£1,000 and one-sixth of the value of the remaining estates is added, the amount of capital owned by persons having between £100 and £500 is estimated at £790–£890 millions.

Such reduction as there has been in the inequality of the distribution of capital since before the World War is due in part to the change in the age distribution of the adult population during the period. The number of persons has increased more in the higher than in the lower age groups, and the inequality of distribution of capital is also somewhat less in the higher than in the lower age groups. Comparison, age group by age group, between 1924–30 and 1911–13, gives further indication that the distribution of capital is less unequal than it was before the War. More than half the capital of the country is owned by persons over 55, and about three-quarters by persons over 45. After 55 the inequality of distribution does not alter much. Beyond this age, the richer may get richer, but the proportion of those with £100 or less remains at about two-thirds of the total number of such adult persons. The table which follows shows the change more definitely.

The changes in the distribution of income in Great Britain

Total	1924–30. Percentage of total wealth	1911–13. Percentage of total wealth	Total	1924–30. Cumulative percentage of numbers	1911–13. Cumulative percentage of numbers
£100 or less	3·6–6·1	6·0–11·1	More than £100	21·3–23·7	11·6–13·4
£100–£1,000	10·4–11·1	10·0–10·4	£1,000	5·8– 6·4	2·9– 3·3
£1,000–£5,000	17·0–17·7	15·7–16·0	£5,000	1·6– 1·8	0·8– 0·9
£5,000–£10,000	10·0–10·3	9·7–10·0	£10,000	0·8– 0·9	0·4
£10,000–£25,000	14·4–14·8	14·0–14·6	£25,000	0·2– 0·3	0·1
£25,000–£100,000	18·6–19·1	18·7–19·5	£100,000	0·04–0·05	0·03
Over £100,000	23·2–23·8	21·6–22·9	—	—	—

are not similarly available for recent years. But Mr. Colin Clark has made the following computation for 1929 :

	Numbers (000's)	Income (£s million)
Over £10,000	10	228
£2,000–£10,000	100	388
£1,000–£2,000	195	235
£500–£1,000	481	309
£250–£500	1,249	402
£125–£250	5,827	1,009
Under £125	11,800	1,170
Total	19,662	3,741

His comment is: "The inequalities of distribution are very considerable. Speaking of the years 1929 or 1935, we can say that one-tenth of the whole working population, with incomes over £250, took 42 per cent. of the whole total of personal incomes, or just under half, if we allow for the fact that the greater part of the non-personal incomes, in the form of undistributed company profits and such, accrued for the benefit of the rich. A small class, comprising 1½ per cent. of the population, with 'four-figure incomes' and upwards, took 23 per cent. of the whole total of personal incomes.

Recent computations of the German National Income give the divisions into industrial classes or sources, but not income groups.

In 1913 wages and salaries were 45·3 per cent., and from 1929 to 1936 the figure has varied from 55·8 to 58·1 per cent. Trades and professions were 20·1 per cent. in 1913, and in 1929 became 15·5 per cent., sinking steadily to 13 per cent. in 1935–36. Agriculture accounted in 1913 for 12·5 per cent., and fell to 7·2 per cent., rising to 9·9 per cent. Pensions, which were 3·1 per cent. in 1913, became 12 per cent. in 1929, 20·6 per cent. in 1932, and went back to 12·2 per cent. in 1936 (*National Industrial Conference Board*, 1937). The American figures show that in 1913–17 agriculture accounted for 17·2 per cent., and this sank to 11·7 per cent. in 1923–27, and 8 per cent. in 1930. Manufacturing went from 29·8 to 27·4 and 26·3 per cent.; service and trade, 33·6, 40·5, and 44·3 per cent. respectively; Government, from 5·2 to 7·2 and 9 per cent. By functional sources the movement was: wages and salaries, 57·5, 65·5, and 63·1 per cent.; entrepreneurial move, 32, 26·3, and 24·7 per cent; property move, 10·1, 8·2 and 10·2 per cent. The main difficulty in dividing the total national income into income groups is that the direct taxative individual total income returns do not extend below the higher income groups, enjoyed by a mere minority. It has been shown recently that these tend to move differentially on a change in price levels, and the highest groups rise proportionately more than the lower groups. Sir Josiah Stamp recorded that, as the price level rises (not in time, but in magnitude), the percentage which the 25,000th income is of the 10,000th income steadily falls; in other words, the very rich gain relatively in income with a high price level, or lose relatively with a low—their income is more sensitive to the effects of the change. (J. S.)

In the United States, while income-tax statistics do not present a complete picture of actual income, and do not include the small incomes, the following figures for net income in 1933 show the number of individuals in each class :

Class	Number
Over $1,000,000	50
$500,000–$1,000,000 . . .	81
$300,000– $500,000 . . .	141
$150,000– $300,000 . . .	695
$100,000– $150,000 . . .	1,084
$50,000– $100,000 . . .	6,021
$25,000– $50,000 . . .	18,423
$10,000– $25,000 . . .	75,643
$5,000– $10,000 . . .	229,754
$3,000– $5,000 . . .	599,075
$2,000– $3,000 . . .	914,198
$1,000– $2,000 . . .	1,480,717

The latest figures regarding income distribution in the United States according to type of income are for 1937, when compensation for employees totalled $44,983 millions; dividends and interest $9,293 millions ; and entrepreneurial withdrawals, rent, and royalties, $13,187 millions. Of employee payments, $15,825 millions was from manufacturing, mining, and construction ; $4,845 millions from transport and public utilities ; $7,958 millions from trade and finance ; $14,494 millions from government service ; and $1,800 millions from work relief. Total income for 1937 ($67,463 millions) was at an index of 86·2 (1929 = 100) as compared with 79·8 for 1936.

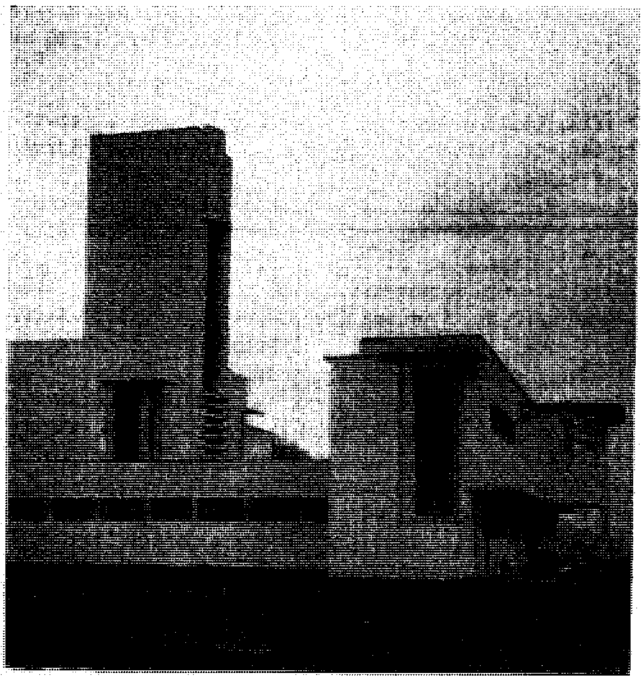
WEATHER : *see* METEOROLOGY.

WELFARE WORK. The field of agreements covering industrial amenities to workers was dominated during 1937 in Great Britain by the question of paid holidays. The setting up of a Committee on this question by the Minister of Labour early in the year and an invitation to all industries to submit evidence have concentrated attention on the movement, which has been singularly uneven in its development since the end of the World War. The Committee concluded their public sittings early in Dec. 1937, and are expected to publish their recommendations in the first quarter of 1938. The Ministry of Labour itself submitted a Memorandum to the Committee, tracing the development of the movement for annual holidays with pay in Great Britain. This showed that immediately after the War the practice of granting paid holidays spread considerably, and in Aug. 1920 there were close on 60 general and district collective agreements between employers and workpeople for paid holidays. The more important general agreements were those covering the railway service, tramway service, printing and book-binding, boot and shoe manufacture, the non-trading services of local authorities, heavy chemical manufacture, flour-milling, match manufacture, cement manufacture, paint, colour and varnish manufacture, cocoa, chocolate and jam manufacture, and gas works. Among the district agreements were those affecting omnibus workers in London, newspaper printing in London, and the employees of retail co-operative societies and of electricity supply undertakings in certain areas. By Dec. 1922, the number of district agreements formulated brought the total up to 100. In the next two or three years no important new agreements were announced, and in March 1925 it was estimated that about 1½ million manual workers were granted paid holidays. Since 1925, the most important new paid-holiday agreements have been those affecting the explosives industry (July 1925), Leicester lambswool spinning (1926), London tanning and currying (1927), asbestos manufacture (1928), goods road transport (1935), municipal omnibus services (1935), Smithfield meat-market workers (1936), London flint glass bottle makers (1936), furniture removers (1936), and pottery workers (April 1937).

The increase in the number of these agreements since 1926 has been offset to some extent by the lapsing or termination of certain agreements, and the diminution in the number employed on railway service.

It is estimated that at the present time about 1¾ million manual workers are paid during holidays. In addition, of course, there are approximately 5 million workers in offices and the distributive trades and officials of industrial undertakings and government workers who are granted paid holidays.

Affecting a smaller number, but showing a more consistent development, is the welfare work inside factories. An official of the Industrial Welfare Society estimates that there are 1,200 firms in Britain now operating such amenities as a ten-minute mid-morning break, accompanying repetitive processes with gramophone records of light music, providing cheap and well-cooked meals in specially equipped canteens, restaurants, rooms for women workers, recreational facilities, and well-decorated private cinemas used occasionally for the development of amateur dramatic talent among the firms' staffs. The tendency towards improved architectural design in factories, with increasing use of glass suntraps, has been noticeable on trading estates, especially to the west and north-west of London.



Fox Photo]

THE NEW PIT-HEAD BATHS AT EAST WEMYSS, FIFE, OPENED IN JANUARY 1937

The most ambitious industrial welfare scheme in operation in Britain is that maintained by the Miners' Welfare Fund. In the last Report (Aug. 1937), it was shown that at the end of 1936, the 16th year of its existence, the Fund had received £15,976,000, and that all but £503,000 had been allocated in grants to specific schemes. The Fund derives its revenue from a levy of a halfpenny (formally a penny) a ton on all coal raised, and a levy of 1s. in the pound on all mining royalties. It is administered by a Committee representing both coal-owners and mine-workers. The provision of pit-head baths is a notable feature of the Fund's work. It is hoped that pit-head baths for practically all the 780,000 now employed in the British mining industry will be available by the end of 1944.

Since the Fund was started, £4,250,000, or nearly 27 per cent., of its income has been spent on building pit-head baths. Since 1921, about £5,300,000, or a third of the Fund's income has been spent on providing miners and their families with facilities for indoor and outdoor recreation. The other main items of expenditure have been £3,400,000 on convalescent homes, hospital, ambulance, and other health services; £1,100,000 on building and equipment for mining education and scholarships, and £937,000 for research.

Major-General Sir Frederick Sykes, the Independent Chairman of the Fund, estimates that the work of the Fund probably affects between 3 and 4 million people.

WELLDON, Rt. Rev. JAMES EDWARD COWELL, British clergyman; born at Tonbridge, April 25, 1854; died at Sevenoaks, June 17, 1937. He was educated at Eton and King's College, Cambridge; was ordained in 1883, and was appointed Master of Dulwich College, but accepted the headmastership of Harrow in 1885. From 1898 to 1902 he was Bishop of Calcutta; and subsequently he was Canon of Westminster, 1902–06; Dean of Manchester, 1906–18; and Dean of Durham, 1918–33. He published translations of Aristotle and of St. Augustine's *De Civitate Dei*, and many other books, the most personal of which were *Recollections and Reflections*, 1915, and *Forty Years On*, 1935.

WESTERN AUSTRALIA, a State of the Australian Commonwealth (*q.v.*), comprising the whole of the territory to the west of longitude 129° E. and covering 975,920sq.m. The office of State governor (representing H.M. King George VI) is vacant, the lieutenant-governor being Sir James Mitchell, K.C.M.G. Population (June 30, 1937), 454,436, forming 6·7 per cent. of the population of Australia. Capital, Perth; population of the metropolitan area, including Fremantle (Dec. 31, 1936), 212,150. The premier and treasurer of a Labour Government is J. Willcock.

Legislation in 1937, other than taxation measures, included Acts to amend the law relating to juries and main roads and the Bread Act; a Bushfires Act, and an Act concerning the retirement of judges. There were some notable transport developments, including the introduction of rail cars for use on agricultural lines, the extension of trolley-bus services, and the launching of a motor vessel for the north-western coastal trade. A drought which threatened at the end of 1936 was relieved by copious summer rainfall in 1937, but conditions later in the year again caused anxiety.

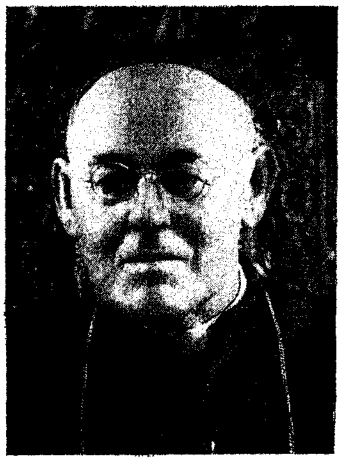
Gold production in 1936–37 was valued at £8,100,000, an increase of £1,400,000 compared with 1935–36. The net value of production in 1935–36 was as follows: agricultural, £4,678,390; pastoral, £5,350,216; dairying, poultry, and bees, £787,952; minerals, £4,687,830; forestry, fisheries, and trapping, £1,400,735; total, primary industries, gross £22,144,762, net £18,434,958; factory industries, gross £17,528,741, net £7,504,209. At the end of 1936, the ratio of unemployment was 5·6 per cent. The total number of unemployed at the end of 1937, including those out of work through sickness or accident, was approximately 6,000. The budget for 1936–37 closed with a deficit of £371,205. For 1937–38, expenditure was estimated at £10,781,840, an increase of £225,202 on the actual results in 1936–37, and revenue at £10,652,985, an increase of £467,552, showing an estimated deficit of £128,855. There were no changes in taxation, but the financial emergency tax was prolonged. The cost of loan works in 1937–38 was estimated at £2,241,427 compared with an actual cost of £2,114,740 in 1936–37. (H. V. H.)

WESTERN INDIA STATES. A large group of States, mostly in the Kathiawar country north of Bombay. They were formerly attached to that Presidency, but are now in charge of an agent to the governor-general, stationed at Rajkot. Their total area is 41,165sq.m., and their population 4,201,797. Ranked in importance by the size of their salutes, the chief States in the group are Cutch (ruler, Maharao Sir Khengarji Sawai, 17 guns), Idar (Maharaja Himat Sinhji, 15 guns), Junagadh (Nawab Sir Mahabat Khan, 13 guns), Nawanagar (The Jam Sahib, 13 guns), and Bhavnagar (Maharaja, Shri K. K. Bhavsinhji, 13 guns). There are 11 other chiefs entitled to salutes, and no fewer than 266 smaller potentates.

WEST INDIES, an archipelago between Florida and South America, including the Greater Antilles (Cuba, Hispaniola, Porto Rico, and Jamaica, with lesser, adjacent islands) and the Lesser Antilles; languages, Spanish, English, French, and Dutch; area approx. 99,000sq.m. Population (est. 1937) 12,020,578; predominantly white in Cuba and Porto Rico; elsewhere, over 90 per cent. negroid, except in Trinidad, where it is 40 per cent. East Indian. The West Indies includes three republics, two United States dependencies, and nine European colonial dependencies (six British, two French, one Dutch), with their several subdivisions. Trade is principally with the United States, and, in the case of colonies, with their respective metropolises. Imports are largely flour and other foodstuffs, textiles, and miscellaneous manufactured articles. Exports comprise sugar and other products of tropical agriculture, and, from Trinidad and Curaçao, petroleum products. Resources are almost entirely agricultural, except in the larger islands where some undeveloped mineral resources exist, and in Trinidad and Curaçao. Economic conditions in 1937 showed a general improvement.

WESTMINSTER, HIS EMINENCE ARTHUR HINSLEY, Cardinal Archbishop of (1865–), born at Carlton, near Selby, Yorks, the son of a builder; was educated at Ushaw College, Durham, and at the English College, Rome. From 1893 to 1897 he was a Professor at Ushaw; for two years a curate at Keighley, Yorks; and then, till 1904, headmaster of St. Bede's Grammar School, Bradford. He was a curate in London suburbs from 1904 to 1917, when he returned to Rome to be Rector of the English College till 1930. In 1926 he was consecrated bishop, and went in 1928 to Africa as Visitor Apostolic to the Catholic Missions. In 1930 he was appointed first Apostolic Delegate for Africa and the Missions, but resigned for reasons of health in 1934, and in April 1935 succeeded Cardinal Bourne as Fifth Archbishop of Westminster.

At the end of 1937 he was raised to the Cardinalate at a Consistory held in Rome, the Red Hat being imposed on him by the Pope on Dec. 16.


Bassano, Ltd.]

CARDINAL A. HINSLEY

WEST VIRGINIA: *see* UNITED STATES OF AMERICA.

WHALING: *see* FISHERIES.

WHARTON, EDITH NEWBOLD, American novelist; born in New York, Jan. 24, 1862; died in France, where she had chiefly lived since 1906, on Aug. 11, 1927. For a biographical notice, *see Ency. Brit.*, vol. 23, p. 557. Her later publications included *Certain People*, 1930, and the autobiographical *A Backward Glance*, 1934.

WHEAT. The wheat acreage in Great Britain reached its lowest point (1,247,000 acres) in 1931; since then the Government subsidy has stimulated a notable expansion:

1935	1,893,000 acres
1936	1,798,000 acres
1937	1,831,000 acres

The whole of this increase was achieved at the expense of other crops, mainly barley and oats. The total arable acreage has continued to decline. Now that oats and barley also receive a subsidy (*see* AGRICULTURE) the development is likely to be less one-sided. The 1937 harvest was better than 1936, but still below average; it was only at all good on light land; the total British wheat output was approx. 1,393,000 tons. The price of home grown wheat fell from 9*s.* 9*d.* per cwt. in January to 8*s.* 8*d.* per cwt. in December, but at one point in the year touched a level at which no subsidy was payable.

The subsidy operates in the following manner: there is a guaranteed price of 45*s.* per quarter which is not absolutely fixed, but falls as the home output rises; for an output of 8 million quarters or less (*c.* 35 million cwt., the product of about 2 million acres in a normal year) the 'standard' guaranteed price is 10*s.* per cwt.; for an output greater than this the payment is reduced in the proportion of the 8 million to the actual output. Thus suppose the actual market price in a given year were 6*s.* per cwt. and the actual production was 8 million quarters the 'deficiency payment' would be 4*s.* If, however, the actual production were, say, 9·6 million quarters, the deficiency payment would be reduced to $\left(4 \times \frac{8}{9{\cdot}6}\right)s.$ equals 3*s.* 4*d.* The standard price would then be 6*s.* plus 3*s.* 4*d.*, or 9*s.* 4*d.* The subsidy is financed out of funds received from an excise on flour, collected from the millers. The scheme is thus in effect a levy-subsidy scheme, the subsidy to the home producer being paid out of a levy or a tariff on imported wheat.

The subsidy payments actually made under the 1931 Wheat Act are shown in the accompanying table.

During several months of 1937 no payments were necessary, as the market price of wheat rose above the guaranteed price.

The World.—The wheat acreage of the world sometimes varies substantially from year to year, particularly in such

Australian Trade Publicity]

WHEAT-SOWING MACHINES IN ACTION IN WESTERN AUSTRALIA

THE WHEAT SUBSIDY

	Total assistance	Subsidy received per cwt.	Subsidy per grower	Average return per cwt.
	£	*s. d.*	£	*s. d.*
1932–33	4,511,000	4 5¼	59	9 9¾
1933–34	7,180,000	4 10¼	83	9 6
1934–35	6,810,000	3 9½	72	8 8½
1935–36	5,640,000	3 4¼	60	9 1½
1936–37	1,337,000 *	1 1½ *	16 *	9 11½ *

* Provisional

countries as the U.S.A. and the U.S.S.R. In 1937, the total world acreage was estimated at 251 million acres compare with 233 million acres in 1936. This was due mainly to the United States acreage rising from 49 to 64 million acres. World production was nearly up again to the level of 1933.

OUTPUT
(000 bushels)

	1937	1936	1931–35
EUROPE . .	1,377,475	1,335,731	1,380,438
U.S.A. . .	200,007	120,498	173,139
CANADA . .	182,505	229,218	346,876
ARGENTINA . .	191,983	249,192	225,766
AUSTRALIA . .	161,954	150,106	171,898
WORLD .	3,549,016	3,306,732	3,496,630

But whereas yields were average in most importing and self-sufficient countries, they were well below average in the chief exporting countries. Canada reaped her worst harvest since 1914; in many parts of Saskatchewan there was no crop at all. As a result, world stocks of wheat fell to the lowest level of the last decade.

WORLD WHEAT STOCK (JULY)

1926	639 million bushels
1934	1,194 million bushels
1936	780 million bushels
1937	568 million bushels

It is likely that the carry over in July 1938 will be about 685 million bushels. The United States will export some of her large crop; it is now some years since she exported any quantity. Russia may also export some wheat. As a result of this and of the general rise in commodity prices wheat (Manitoba No. 1) rose from 54*s.* per quarter in January to 57*s.* per quarter in December, and was higher in terms of wholesale prices than at any time since 1909–14.

Prior to 1929, the four chief wheat-exporting countries were the U.S.A., Canada, the Argentine, and Australia, but of recent years only the last three have sold large quantities abroad. The latest figures are:

(000 bushels)

	1937–38 *	1936–37	Average 1931/32–1935/36
U.S.A. . .	100	— 17	33
CANADA . .	85	210	214
ARGENTINA . .	95	162	134
AUSTRALIA . .	103	102	121

* Provisional estimate.

Practically the whole of the exports went to western European countries, and indeed the future of international trade in wheat depends on the European demand. These importing countries between 1925 and 1933 increased their wheat acreage from 46 to 53 million acres, since when it has been approximately stable; at the same time, average yields per acre were increased by at least 10 per cent. and, in the case of certain countries, such as Italy, by as much as 20 per cent. The consumption of these countries, on the other hand, has increased by only 5 per cent.; and hence imports, which in 1922–27 constituted 40 per cent. of total wheat supplies, in 1932–37 constituted only 25 per cent. Moreover, it is notable that *per capita* consumption has been falling slightly but steadily in these countries, so that the increase in total consumption cannot be expected to continue as populations become stationary. As far as can be foreseen, therefore, the European demand for imports is likely to decrease still further. It is sometimes suggested that an alternative market for wheat might be developed in the Far East. But Japan has increased her wheat output by 60 per cent. between 1932 and 1937, and has become self-sufficient; nor does her *per capita* consumption show any tendency to rise. In India and China there is still less likelihood of an immediate increase in wealth which might allow of wheat being substituted for rice and other cheap pulses. Hence an expansion in world demand is not probable. But the acreages sown to wheat in the four exporting countries in 1937 would, with normal harvests, have produced greatly in excess of current demand. For the fourth year in succession drought prevented serious overproduction. And yet the 1938 acreage overseas will certainly be larger than that of 1937, since wheat prices have been rising. With 1937 acreages and normal yields world wheat stocks in 1940 would amount to 1,370 million bushels.

One other aspect of the wheat problem is the enormous differences in the prices of wheat in different countries. In 1933, for example, wheat cost four times as much in Switzerland as in England. It has been said that this artificial protection of certain domestic agricultures inflicts an undue burden upon the urban consumer in the shape of dearer food. In practice, however, the price of bread varies as between different countries far less than the price of wheat. The following figures illustrate the point:

PRICES EARLY IN 1937

	Price of Wheat	Price of Bread
	Shillings per cwt.	Pence per lb.
FRANCE	14/4	2
CZECHOSLOVAKIA	14/7	2
SWITZERLAND	18/8	2¼
GERMANY	18/11	3½
ITALY	16/8	2¾
GREAT BRITAIN	9/10	2¼
DENMARK	8/11	5
BELGIUM	11/2	2¼
AUSTRALIA	8/6	2
U.S.A.	9/4	2

Two countries of the highly protectionist group have bread prices lower than Great Britain; whereas in Denmark white bread costs more even than in Germany. The price of bread depends of course partly on the price of wheat, but also on the costs of milling and baking and on the type of wheaten bread sold. In several countries where, owing to protection, the domestic price of wheat is high, the governments take special measures to control the price of bread and the profit margins of both millers and bakers.

(P. L. Y.)

WHITE, MAUDE VALERIE, British composer of popular songs; born at Dieppe, June 23, 1855; died in London, Nov. 2, 1937. Miss White studied at the Royal Academy of Music, London, and was elected to the Mendelssohn Scholarship, which, however, ill-health caused her to give up. She did her best work with settings of words by Herrick and Shelley, such as 'To Daffodils' and 'To Electra' from Herrick, and 'My Soul is an Enchanted Boat' from the *Prometheus Unbound* of Shelley. Her most popular song was 'Until'. In 1894 she published a translation of Axel Munthe's *Letters from a Mourning City* (Naples).

WHITE RUSSIAN S.S.R., The, lies in the west of the Soviet Union, bordering on Poland and Latvia, and forming an important strategic outpost. The capital is Minsk; the national flag is red, with the hammer and sickle on the left in gold, a five-point star above and initials БССР underneath. Of the leading cities, Minsk has (1936) 198,000 inhabitants, Vitebsk 143,800, and Gomel 139,500.

Area and Population.—Area: 49,034sq.m., mainly plain, with hills in the north, and great marshes in the south, which are now gradually being drained. Population (1933): 5,439,000 (rural 4,549,000, urban 890,000), made up of 80·6 per cent. White Russians, 8·2 per cent. Jews, chiefly in the towns, 7·2 per cent. Russians, and the rest Ukrainians and Poles. The chief languages spoken are White Russian, Russian, and Yiddish. The total number of pupils (1936–37) was 969,000, and there were over 7,000 schools, and many higher educational establishments and research institutes.

History.—On Feb. 19 the Twelfth Extraordinary White Russian Soviet Congress in Minsk adopted the new Constitution of White Russia. According to paragraph 14 of the Constitution, the republic includes 4 regions, 66 districts, and 4 towns with independent administrations. With the participation of 97·4 per cent. of the population in the elections to the Supreme Council of the U.S.S.R. on Dec. 12, 1937, White Russia takes second place among the Union Republics. The campaign carried on in the whole of the Soviet Union against alleged Trotskyist wreckers and Fascist spies also claimed many victims in White Russia. Many of the heads of the republic (including 2 premiers), as well as high party officials, were denounced and imprisoned. Some of the accused, including President Chervyakov, committed suicide.

Trade and Communications.—*Agriculture.*—Sown area (1936): 14,589sq.m. In 1937 there were 87·5 per cent. collectivized peasant households. Chief products: potatoes, flax, hemp. In pig culture White Russia holds the first place in the U.S.S.R.

Natural resources include peat and valuable forest land (one-quarter of the territory of the Republic). *Commerce and Industries.*—The retail trade turnover (1936) was 2·3 milliard roubles. Chief exports: pork, bristles, timber, paper, matches, machine tools.

The 1936 output of industry (prices 1926–27) was 1,413 million roubles; and that of electricity 388 million kW. hours.

Industries.—Linen, footwear, bristles, food, timber, paper, matches, cement, glass, tailoring, metal.

Transport.—In 1936, 1,926m. of railways carried 18,365,000 tons of freight.

(S. YAK.)

Planet News Photo]

MINSK, THE CAPITAL OF SOVIET WHITE RUSSIA; PHOTOGRAPH SHOWS KARL MARX STREET

WHOLESALE PRICES : *see* PRICES, STATISTICS OF.

WIDOR, CHARLES MARIE, French organist and composer; born at Lyons, Feb. 22, 1845; died in Paris, March 12, 1937. He studied in Brussels under Lemmens, and in 1891 succeeded César Franck as professor of organ playing at the Paris Conservatory. It was as organist of the Church of St. Sulpice, Paris (1869–1934), however, that he won a reputation as one of the greatest masters of organ technique and programme-making. In 1910 he was elected to the French Academy of Fine Arts, and after 1914 served as permanent secretary of that body. Among his compositions were 10 symphonies and many suites, concertos, sonatas, and chamber pieces. He also published *Technique of the Modern Orchestra*, 1905.

WILD LIFE, CONSERVATION OF. Notable progress was made during 1937 towards the protection and conservation of the various forms of wild life which still survive to-day in spite of the encroachments of civilization.

In Great Britain, where a large number of organizations exists for the protection of birds, the Royal Society for the Protection of Birds launched an appeal for funds to buy Dengemarsh, on the Kent coast, a stretch of shingle on which terns breed. Some of the funds were provided from the resale of Greatstones, which was made necessary by extensive building operations in the vicinity. Land adjoining Dengemarsh was already purchased, and the combined area of 1,281 acres makes a valuable retreat for rare birds. The National Trust (*q.v.*) acquired the Calf of Man, an island south-west of the Isle of Man, which is to be a bird sanctuary, and also additional land at Wicken Fen. The purchase of the foreshore rights at Scolt Head, Norfolk, ensures the preservation of this sanctuary for sea-birds. The Council for the Preservation of Rural England did valuable work in suggesting other land for defence purposes than where rare animals breed. Frances, Countess of Warwick, willed the 1,000-acre Easton Park, Dunmow, Essex, to the Essex County Council to ensure its remaining a nature reserve. There are large aviaries in the grounds of Easton Lodge. The island of Grassholme, situated in the Atlantic, 18m. off the coast of Pembrokeshire, Wales, is a sanctuary for sea-birds, including thousands of gannets.

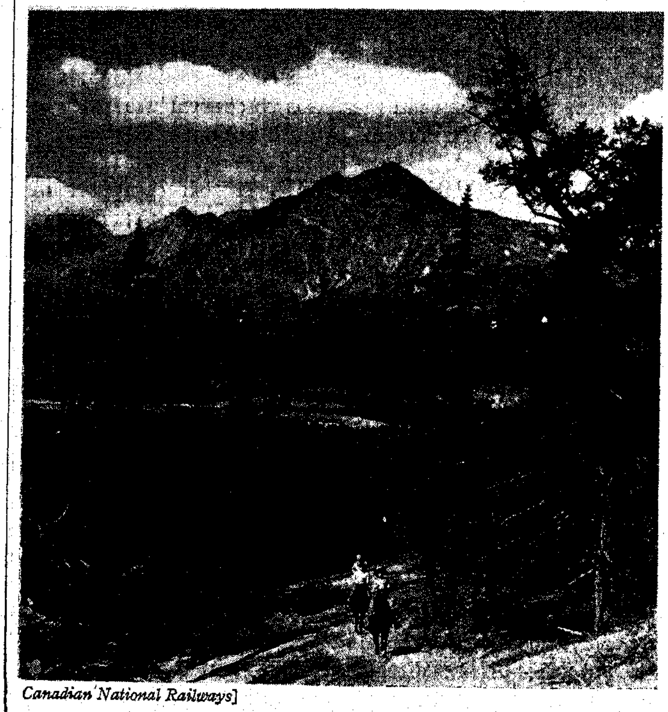
Fox Photos]

GANNETS ON THE ISLAND SANCTUARY OF GRASSHOLME, OFF THE COAST OF PEMBROKESHIRE, WEST WALES

In a written reply in Parliament on Dec. 23, the Secretary of State said that areas had been set aside for the conservation of wild life generally in British Guiana, Ceylon, Cyprus, Fiji, the Gold Coast, Kenya, Malaya, Nigeria, North Borneo, Northern Rhodesia, Nyasaland, Palestine, the Seychelles, Tanganyika Territory, Trinidad, and Uganda. Additional powers existed in practically all parts of the colonial empire for the protection of special species. Bird sanctuaries have been established in the Bahamas, Falkland Isles, Hong Kong, Jamaica, and St. Helens. The general policy of the government in this matter is in accordance with the principles set out in the international convention relative to the preservation of fauna and flora of Nov. 8, 1933.

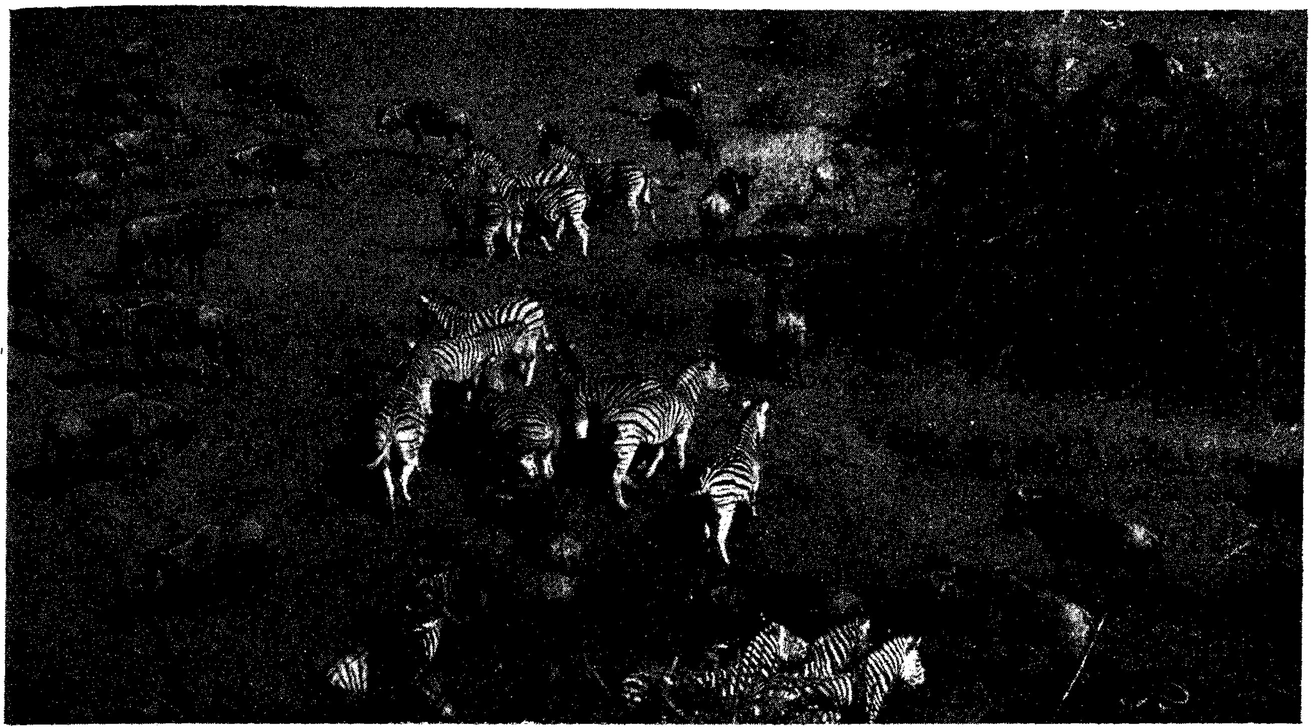
Africa.—In the great Kruger national park, covering about five million acres in the eastern Transvaal, the many varieties of wild animal life preserved there continue to flourish; the species include the lion, giraffe, zebra, wildebeest, buffalo, elephant, rhinoceros, the splendid sable antelope, the ostrich, and many other lesser fauna. Three other national parks created in 1931, and all situated in the Cape Province, are not yet accessible to the public, but in 1937 steps were being taken to hasten the provision of the necessary facilities in the cases of the Addo elephant park and the Bredasdorp bontebok park. The Mont-aux-Sources national park, on the border of Natal and Orange Free State, the Zululand game preserves, the Giant's Castle eland reserve in Natal, the Sommerville springbuck reserve in the Orange Free State, and other reserves of the Union are controlled by the provincial administrations of the respective provinces. During 1937, it was decided to purchase a reserve in the Cradock district to safeguard the mountain zebra.

Canada.—Substantial increases in wild animal life in the various Canadian national parks were recorded during the fiscal year ended March 31, 1937. Considerable gains were observed in the numbers of wapiti or elk, and moose, which



Canadian National Railways]

PYRAMID MOUNTAIN, JASPER NATIONAL PARK, ALBERTA



South African Railways and Harbours]

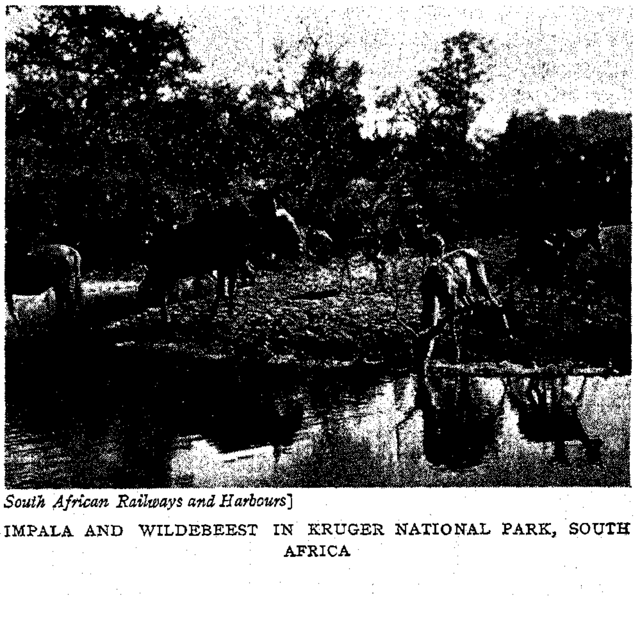
ZEBRA AND WILDEBEEST IN KRUGER NATIONAL PARK, SOUTH AFRICA

abounded particularly in Banff and Jasper national parks in Alberta, and Yoho national park, B.C. In Buffalo national park, covering approximately 125,000 acres, the great buffalo herd continued to multiply. Rocky Mountain sheep were more numerous in Banff national park, and increases were noted in the numbers of deer, elk, and bear in Waterton Lakes national park, Alberta, Riding Mountain national park, Manitoba, and Prince Albert national park, Saskatchewan. Further increases were registered during the year of the different species inhabiting the four wild animal parks set aside by the Dominion Government in Alberta. An estimate of species enclosed in the wild animal parks on March 31, 1937, provided a total of 375 antelope; 6,616 buffalo; 3,618 elk; 900 moose, and 1,507 deer, together with an undiscoverable number of four-horned sheep, Rocky Mountain sheep and goats, white-tailed deer and elk. A report in August of the annual round-up of the Canadian reindeer herd 200m. north of the Arctic Circle indicates that the herd is multiplying rapidly, and now exceeds 4,000 animals. The fawning, which takes place on Richards Island, the grazing reservation east of the Mackenzie river, resulted in the addition of 1,181 fawns to the herd.

United States.—During 1937 there was much advance in the general field of wild life conservation, particularly in the protection of birds.

Migratory Bird Treaties.—Migratory bird treaties in various forms have been pending between the United States and Mexico for more than 10 years. The convention for the protection of migratory birds and game mammals was signed in the City of Mexico, Feb. 7, 1936. This agreement became effective when ratifications by both countries were exchanged in Washington, March 15, 1937. It is similar to the migratory bird treaty with Canada (through Great Britain) in general terms but more comprehensive, and protection will be extended to about 140 migratory species not included in that agreement. Like the treaty with Great Britain, the convention with Mexico is to remain in effect for 15 years, after which it may be continued indefinitely, unless abrogated by one or the other of the nations by giving notice one year in advance.

Bird Refuges.—The United States Biological Survey is charged with the rehabilitation of land and water areas on a scale that, with restricted shooting everywhere, is designed to arrest the decline in numbers and the threatened extermination of certain ducks, geese, swans, and other migratory waterfowl. Water-impoundment structures have been placed on lands suitable for flooding to restore the proper habitat. Wild life technicians have supervised the planting of tons of duck-food and millions of food-bearing trees and shrubs. Nesting islands and game shelters have been constructed. Upland tracts have been planted to grain crops for food and cover. The control of predatory species highly detrimental to waterfowl has been instituted on many of the refuges. It is estimated that on the refuges as a whole, bird populations were three to five times greater



South African Railways and Harbours]

IMPALA AND WILDEBEEST IN KRUGER NATIONAL PARK, SOUTH AFRICA in 1937 than when the emergency programme was initiated in 1934. Of unique character among the new acquisitions is the Okefinokee wild-life refuge in southern Georgia, containing 292,000 acres. This wilderness area is becoming increasingly attractive to wintering waterfowl. The varied assortment of wild life includes the nearly extinct ivory-billed woodpecker, the limpkin, sandhill crane, black bear, and the Mississippi alligator.

Migratory Bird Refuges.—Seventeen new bird refuges were established by executive order in the United States during 1937. The number of Federal refuges is now 209, embracing about 4,500,000 acres.

Federal Aid.—The Pittman-Robertson Act, known as the Federal Aid to Wildlife Restoration Act, 1937, was the result of concerted efforts by wild life conservation organizations to provide means of restoring natural conditions for wild life, especially species hunted as game. Revenue accruing during 1939 and subsequently from the 10 per cent. tax imposed on firearms, shells, and cartridges is to be set apart as ' the Federal aid to wild life restoration fund '.

WINDSOR, EDWARD, H.R.H. THE DUKE OF (1894—), formerly H.M. King Edward VIII of Great Britain and Ireland ; the eldest son of King George V, he succeeded to the throne on Jan. 20, 1936, but in view of the advice of his ministers that his projected marriage with Mrs. Simpson, an American citizen whose second divorce was then pending, might prejudice the prestige of the crown, he abdicated on Dec. 11 of the same year, leaving England for Austria, where he took up residence at Schloss Enzesfeld, the home of the Baron Eugene de Rothschild.

In Feb. 1937, the Duke was visited by his sister the Princess Royal and her husband the Earl of Harewood ; and on March 29 he removed from Enzesfeld to St. Wolfgang. On May 4 he joined, at the Château de Candé, near Tours, Mrs. Simpson (who had meanwhile resumed her maiden name of Warfield), the formalities of whose divorce from her husband Mr. Ernest Simpson had been completed on the previous day; and on June 3 his marriage with Mrs. Wallis Warfield took place at the château, an Anglican clergyman performing the religious ceremony. It had been officially announced a few days previously that the style of ' Royal Highness ', enjoyed by the Duke, would not be shared by his wife or descendants, if any. After the marriage the Duke and Duchess travelled to the Castle of Wasserleonburg, in Carinthia, for their honeymoon, remaining there until September, when they removed to Borsodivánka in Hungary, the home of Mr. Charles Bedaux, an industrial psychologist unpopular in American labour circles. At the beginning of October, during a visit to Paris, was announced the Duke's intention of visiting Germany and the United States to study social and housing conditions. The proposed visit to Germany followed at once, the Duke meeting Hitler, Goebbels, and other statesmen in Berlin; but that to America was cancelled, on the eve of departure, strong opposition, largely on the ground of the association of Mr. Bedaux with the trip, having been expressed in the British and especially the American Press. In November, an apology and damages were secured by the Duke as the result of the agreed settlement of a libel action against the author and publishers of Mr. Geoffrey Dennis's *Coronation Commentary*, a book which contained certain unflattering observations on His Royal Highness.

Vandyk]

H.R.H. THE DUKE OF WINDSOR

WINDWARD ISLANDS, a British West Indian colony, including Grenada, St. Lucia, and St. Vincent ; language, English ; capital, St. George's (Grenada) ; governor, H. B. Popham, C.M.G. The area is 616sq.m. The population, predominantly negro and mulatto, was officially estimated at 205,804 in 1935. The chief cities are St. George's, 5,000, and Castries (St. Lucia), 20,000. The colony is administered by a governor and council, with subordinate executives and councils for each island. In 1936, imports totalled £650,963, 51 per cent. from Great Britain. Exports (cocoa, sugar, and other tropical agricultural products) were £627,400, chiefly to Great Britain (33 per cent.), the United States (23 per cent.), and Canada (19 per cent.). The monetary unit is the pound sterling.

WINES. Latest reports from the wine-growing districts of Europe indicate that the new wines are developing well. They confirm earlier opinion crediting 1937 with having produced a vintage of exceptional merit, but also indicate that there are the usual and inevitable exceptions to the rule. Quality and quantity are indeed rarely found together in the world's vineyards, and the yield has been far from abundant. In the Claret country the quantity is short, although not so short as some experts had anticipated, and the quality is good. This also applies to Burgundy, where one report gives the quality as quite exceptional and the yield far below the previous year. In Champagne the wines are said to be good, but the quantity ' middling '. Very fine hocks and moselles have been produced in diminished volume, but those who compare the German wines with the ' wonder ' year of 1921 are probably over-optimistic. Madeira has achieved fine wines without any drop in production. In Portugal the harvest was greatly aided by opportune showers prior to the gathering, and there is no doubt that the heavy rains of the last two winters have had a beneficial effect in maintaining the old vines in condition throughout the summer drought. The year 1937 also saw the arrival of the 1935 ports in England to be bottled and laid down for maturing. All the shippers have offered either the 1934's or the 1935's as a year. In the Jerez vineyards the harvest was gathered under war-time conditions. For some time past the bodegas have been denuded of workmen who have gone to join the fighting forces. Coopers find difficulty in getting staves for their casks, importation of these having been rationed. Indeed, the cost of all materials has increased enormously. Yet shipment of sherry to England continues increasing in volume, to meet the ever-growing demand.

There has been a notable expansion in the American wine industry since prohibition was repealed. It is estimated that the consumption of Californian wines in 1937 was 65 million American gallons, compared with 53,834,364 gallons in 1936, 40,049,460 in 1935, and 26,166,091 in 1934. Last year 560 wineries crushed 494,000 tons of grapes and produced 53,160,688 gallons of wine.

In South Africa the vintage is harvested in the English spring, and this applies to Australia and the other wine-growing countries of the southern hemisphere, of which Chile is the most prominent.

World Production.—The short harvest of 1937 followed

Fox Photos]

IN THE WINE VAULTS OF LONDON DOCKS

a period in which conditions have favoured heavy yields. For the five years prior to 1933 the world's average annual production was 173 million hectolitres. In 1934 it was 211 million hectolitres, and in 1935, 222 million hectolitres; and this swollen production was achieved without any appreciable increase in the area under vines.

About 90 per cent. of the world's harvest is produced in Europe. France, Italy, Spain, Portugal, and Germany are the chief exporters and producers. With the exception of Algeria and Chile (which export considerable quantities) and South Africa and Australia (which find a good market in the United Kingdom), the yield elsewhere is almost exclusively consumed in the countries of origin. (D. F. C.)

WISCONSIN : *see* UNITED STATES OF AMERICA.

WISE, THOMAS JAMES, British bibliographer and book-collector; born Oct. 7, 1859; died May 13, 1937. After a private education, he was engaged in business in the London Produce Market; but all his leisure, and all the available balance of his gradually increasing income, was devoted to his scholarly passion for the collection of first editions in their original condition. His widely famous collection, the Ashley Library, is particularly rich in such original first editions of the English poets and dramatists from the Elizabethan age onwards. This library was acquired, some months after his death, by the British Museum. In addition to the 11 volumes of the Ashley Library Catalogue, Wise published bibliographies of several English poets and novelists, edited Spenser's *Faerie Queene*, and collaborated with Sir William Robertson Nicoll in *Literary Anecdotes of the XIXth Century*.

WOMEN'S INSTITUTES. At the end of 1937, there were 5,519 Women's Institutes in England and Wales, with a membership of about 330,000. They are affiliated to the National Federation of Women's Institutes (which in 1937 celebrated the 21st anniversary of its formation) and grouped in County Federations.

The annual general meeting of the National Federation, held in London in June, was attended by 4,984 delegates, and passed several resolutions on public questions, of which perhaps the most important was one urging the Government to reduce the price of milk to needy parents of children under school age. Information on the milk supply to mothers and young children in rural districts has been collected by the Institutes, and a deputation from the National Federation met Sir Kingsley Wood, Minister of Health, and submitted the Institutes' case for the reduction in price.

Sir Kingsley Wood met delegates from 44 County Federations at a conference convened by the National Federation to discuss the public health services. Forty-six students attended a four-day rural domestic economy school, of which the theme was 'From the garden to the kitchen', and the Board of Education organized a special course in nutrition for Institute cookery teachers.

County Federations during the year have held exhibitions of produce and handicraft, festivals of music and drama, and various educational conferences. The Institutes hold monthly meetings, planning their own programmes, which cover a wide range of subjects concerning members' homes and gardens, the community, and cultural subjects, excluding only party-political and sectarian matters. Over 60,000 of these meetings, which have a social as well as an educational element, have been held during the year. In addition, classes on domestic subjects, handicraft, folk dancing, singing, etc., are arranged by the Institutes, as well as local exhibitions, dramatic performances, concerts, and many other activities. (F. M. F.)

WOOL. Politics Dictating Wool Commerce.—The biggest commercial change in the wool industry of recent years has been the effect of State trading on a large scale. In the totalitarian States, the Governments completely control wool buying. Moreover, the policy of self-sufficiency adopted by them has led to the introduction of a number of blood sheep stocks from Great Britain and the British Colonies into the U.S.S.R. and Manchukuo, and to the large-scale production of wool substitutes in Italy, Germany, and Japan. As a result, these States are now less important internationally as wool buyers.

Politics have therefore, by bi-lateral trade agreements, quotas, currency control, etc., affected not only the commerce in raw wool from such countries as Australia, Argentina, New Zealand, the Union of South Africa, and Uruguay (producers who consume only about 5 per cent. of their production), but also the export trade in manufactured or semi-manufactured goods from the industrial countries. Of the latter, virtually only two, the United States of America and the United Kingdom, are both wool producers and large-scale consumers; and of these the United Kingdom, which has the largest number of looms of any country in the world, is the only large exporter. In the United States, owing to high tariffs and high production costs, most of the output is consumed domestically.

Great Britain and the Wool Industry.—In Britain the post-war effects of foreign tariffs and currency restrictions on the export trade were to some extent offset by the institution in 1931 of import tariffs, which saved a considerable part of the industry from extinction, attracted French, Belgian, and German capital and technicians to the country, and resulted in an increase in Continental types of machinery and much greater British purchases in overseas markets of types of wool that had hitherto been regarded as suitable mainly for the Continent. Internal reconstruction, by the process of the buying and scrapping of redundant plants, has been successfully carried out in one section of the trade through the Woolcombers' Mutual Association. British mills and textile personnel to-day are somewhat fewer, and output smaller, than the *possible* output of ten or fifteen years ago. A notable commercial-financial event has been the growth of multiple tailoring, with a greater mass-purchasing than would have developed on the price level of bespoke garments. The multiple tailors are now the highest individual consuming firms of cloth in the country, and their buying in the past two or three years has set the pace for the rest of the trade.

Wool Research.—In recent years many problems have been elucidated and considerable advances made in systems of rendering wool garments unshrinkable and non-irritating. To promote research and, if necessary, the advertising of wool, Australian, New Zealand, and South African wool growers have recently agreed to a levy on each bale of wool they produce, a move prompted by the rapid rise in output of rayon, staple fibre, and other wool substitutes, although it is still undecided whether the substitutes are an ally of wool or a competitor. Italy's substitute 'lanital' is made from milk, in such quantities that the latter has to be imported for the purpose. Germany, Great Britain, Japan, and the United States manufacture wool substitutes from wood pulp. None give the same effect as wool, being mostly deficient in elasticity and warmth, in spite of all the efforts of chemists to reproduce wool characteristics.

World Trade in Wool.—During 1935, 1936, and 1937, owing to political, labour, and currency troubles, France's consumption dropped considerably. Belgium has had a much steadier employment. After a rapid rise to the position of second most important customer of Australia, Japan fell away during 1936, and in 1937, preoccupied by war needs, was taking very little. America enters the international wool market only violently and erratically. During 1936 there was no appreciable increase in the total volume of the world's exporting trade in wool goods. Countries that bought more wool appeared to do so to satisfy demands of home consumers only. Britain's retained wool imports were the highest of recent years, and America's takings also increased, while those of France, Germany, Japan, and Russia all declined. About one-third of the

Port of London Authority]

PROSPECTIVE BUYERS EXAMINING WOOL ON THE SHOW FLOOR AT THE LONDON DOCKS

	Raw Wool						Semi-Manufactured Wool Products					
	Production (including exports). Greasy Basis in Millions of lb.			Consumption Domestic Production Plus Retained Imports. Actual weight in Millions of lb.			Exports					
							Tops			Wool Yarn		
							In Millions of lb.					
	1934/35	1935/36	1936/37	1934	1935	1936	1930	1935	1936	1930	1935	1936
Argentina *	370·0	366·0	385·0	—	—	—	—	—	—	—	—	—
Australia †	1,015·4	991·7	1015·0	—	—	—	—	—	—	—	—	—
Belgium . . . %							9%	11%	14%	9%	10%	15%
lb.	—	—	—	65	118	141	10·4	14·9	17·6	14·9	11·1	17·4
Czechoslovakia . %	—	—	—	—	—	—	—	—	—	12%	10%	12%
lb.										21·2	11·9	13·9
France . . . %							42%	37%	36%	32%	20%	13%
lb.	—	—	—	388	441	390	47·6	49·4	45·9	54·6	23·1	15·4
Germany . . %							17%	2%	1%	13%	9%	15%
lb.	—	—	—	351	319	283	19·3	2·1	1·6	22·6	10·7	17·5
Italy	—	—	—	183	156	83	—	—	—	—	—	—
Japan . . . %										3%	5%	6%
lb.	—	—	—	181	243	217	—	—	—	0·6	5·3	7·1
New Zealand * .	275·9	316·5	295·0	—	—	—	—	—	—	—	—	—
Soviet Union .	128·0	158·4	202·1	196	234	257	—	—	—	—	—	—
United Kingdom . %							26%	42%	41%	22%	36%	32%
lb.	115·0	109·0	108·0	604	644	711	28·8	55·9	52·1	37·3	40·9	37·2
Union of South Africa * .	222·0	250·0	285·0	—	—	—	—	—	—	—	—	—
United States .	451·0	452·7	448·6	559	653	702	—	—	—	—	—	—
Uruguay * .	117·0	114·0	120·0	—	—	—	—	—	—	—	—	—
Other Countries . %	—	—	—	—	—	—	6%	8%	8%	11%	10%	7%
lb.							6·9	9·7	9·8	22·2	11·4	9·0
World Total . %							100%	100%	100%	100%	100%	100%
lb.	3,665·1	3,741·0	3,867·6	—	—	—	113·0	132·0	127·0	173·4	114·4	117·5

Notes.—The World Total figures include also the production of the less important countries.
The percentages given in the last six columns represent the proportion of exports to total world exports.

* Consumption is less than 5 per cent. of production in these countries.

† Consumption is about 5 per cent. of production.

BIBLIOGRAPHY.—The following sources have been used for the foregoing statistics: Imperial Economic Committee, London; Dalgety & Co., Ltd., London; *Wool Record & Textile World*, Bradford.

exports of the five chief raw-wool exporting countries were consigned to the United Kingdom, Japan remaining the second largest importing purchaser. The United Kingdom and the United States are the two largest consumers from all sources.

(J. A. Hn.)

WORLD COURT : *see* PERMANENT COURT OF INTERNATIONAL JUSTICE, THE.

WRESTLING. The 1937 winners of the British amateur championships were as follows : *Catch-as-Catch-Can :* fly weight, B. Hardy ; bantam weight, R. Cazaux ; feather weight, J. W. Taylor ; light weight, A. Thompson ; welter weight, W. Fox ; middle weight, L. H. A. Jeffers ; light heavy weight, T. Ward ; heavy weight, A. Dudgeon. *Cumberland and Westmorland style :* feather weight, A. Harman ; light weight, J. Stratton ; middle weight, J. Sinclair ; light heavy weight, R. Yowart ; heavy weight, J. D. Black. The world's heavy weight champion is Jim Londos (U.S.A.).

In the United States, the A.A.U. national championships at Baltimore saw some very keen competition, though the entry list was not as large as in some years. At the national collegiate meet at Terre Haute, Ind., Oklahoma Agricultural and Mechanical College won the team championship. Professional wrestling in the United States suffered a lean year in consequence of constant bickering among the promoters.

WYOMING : *see* UNITED STATES OF AMERICA.

X

X-RAY DIAGNOSIS. The diagnostic value of the X-rays has been increased in recent years by improvements in apparatus and discovery of new methods of examination.

The rotating anode tube has gradually been perfected, and is now coming into general use. Due to the small focal point of these tubes, roentgenograms may now be obtained with much sharper and richer detail than was formerly possible. They also permit use of currents of higher milliamperage, with consequent reduction in time of exposure. This is of great value in X-ray examinations of children and of organs or parts which cannot be immobilized.

The kymograph is an instrument which is now coming into general use as an aid to diagnosis. Kymography consists in making roentgenograms of moving parts or organs, such as the heart, stomach, or diaphragm through a grid consisting of lead strips separated from each other by equal distances. The roentgenogram is made while the grid is moving at right angles to the long axis of the lead strips and reveals the nature and degree of movement of the heart or other organ under examination. It is especially valuable in differential diagnosis of diseases of the heart and other structures within the chest.

Tomography is a method of roentgenography which results in producing a distinct picture of a selected layer of the body. It is accomplished by means of co-ordinated movements of the X-ray tube and the film carrier around the part of the body under examination.

Therapy.—That many cases of cancer can be cured by means of the X-rays and radium is now established. It has been known for many years that some cancers are more sensitive than others to radiation. It is now known that sensitivity to radiation depends not only upon the histological structure of the tumour, but also to the reaction set up in the surrounding normal tissues, upon the location of the tumour, upon the rapidity of reproduction of its cells, and upon the age and general condition of the patient. The biological changes that take place when tissue is irradiated are not yet well understood, and they are the subject of continued, widespread investigation. There has been much research upon the relation of the ovarian and pituitary hormones to tumour formation and upon the effect of irradiation of the ovaries and pituitary gland on cancer and tumour growth. There are indications that progress is being made along these lines.

A field in which radiation therapy has made definite progress is in the treatment of inflammatory diseases. Such treatment is now known to be of great benefit in carbuncles, boils, erysipelas, disease of the nasal accessory sinuses in children, and in numerous other acute and chronic inflammations. The beneficial results are thought to be due to production of hyperaemia and intensified lymph circulation which brings large quantities of antibodies to the inflamed area.

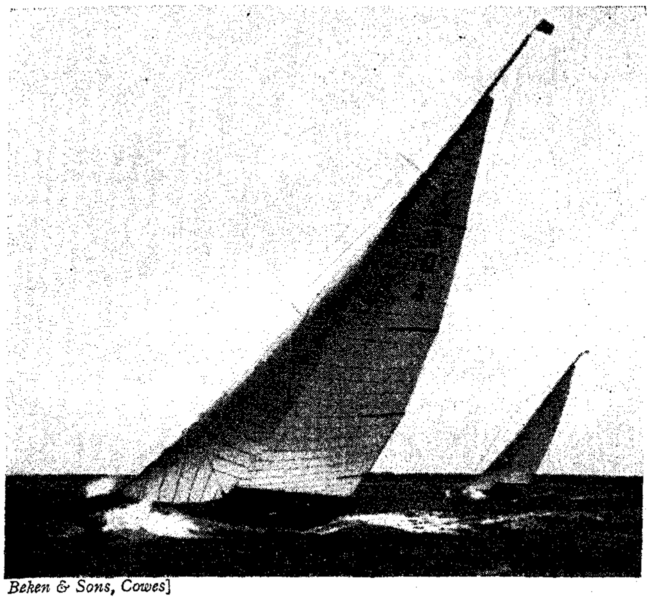
The use of high-voltage currents (four hundred thousand to a million volts) for the production of X-rays for treatment of cancer is receiving attention from both the clinician and the research worker. It is still too early to appraise the results of such treatment. (A. C. CH.)

Y

YACHTING. As was to a degree inevitable, with racing interest centred largely on the America's Cup, 1937 has been a year of promise rather than performance in Europe. Without its most interesting vessels, the big (J) class did not race in British waters, the 12-metre class heading the programme, as it will probably continue to do, although the effort, still unsuccessful, to evolve a 65-foot (L) class, less expensive than the (J) boats, attracted great attention. In Britain the racing was greatly influenced by the Coronation International Regatta at Torbay, which lasted a fortnight, and which collected no fewer than 312 entries, the biggest known in the history of British yachting, divided into 17 classes. The weather was excellent, and most of the racing very interesting; only the number of overseas visitors was rather disappointing. The waning popularity of the international metre classes is conspicuous, largely through cost, but an important step was made by the International Yacht Racing Union laying down a definite minimum beam restriction, otherwise the rapid tendency, especially in Scandinavia, towards the ' plank-on-edge ' could only have killed the international rule in time. The minima laid down are lenient, but the policy is sound. The British tendency is towards numerous local classes, either restricted or one-design, and there is a vogue for foreign designers, but many of these classes will probably be very short-lived. The programmes in 1937 offered plenty of handicap racing, but there is a demand for better general organization on that side.

Off-shore or ' ocean ' racing continues to attract numerous yachtsmen, and the year saw a number of excellent contests. This form of racing has produced many very interesting yachts in recent years, and has permitted a number of the younger architects, whose names were almost unknown a few years ago, to make high reputations. Very conspicuous among the new fast cruising yachts is the Clyde-built ketch ' Thendara ', 145 tons, which aroused unbounded admiration when she made her debut at Torbay, and showed a fine turn of speed in the handicap races.

During 1937 building was checked by the rapid rise in building prices, which has undoubtedly prevented the placing of many orders, although the enthusiasm for the fast cruiser, and the scope that it gives to both builder and yachtsman, has caused several contracts to be placed. Apart from these off-shore and class racers, most of the new yachts have been full-powered motor vessels of various types, among the most interesting being Mr. Sopwith's



Beken & Sons, Cowes]

THE YACHT 'NADA' Q CLASS AT COWES

'Philante', of over 1,600 tons displacement, and the inland waterway yacht subscribed for by the people of Holland as a wedding present for Princess Juliana. (F. C. Bo.)

United States.—The defence of the America's Cup against the challenge of the Royal Yacht Squadron of Great Britain dominated an unusually active season in American yachting during 1937. Also, in design and rig, the defender incorporated certain ideas that seem likely to have a lasting effect.

The challenging yacht in 1937 was the 'Endeavour II', a 'Class J' cutter of 164 tons' displacement owned by T. O. M. Sopwith. To meet the challenge, Harold S. Vanderbilt, of the defending New York Yacht Club, had a new yacht built. This boat, named 'Ranger', was designed by W. Starling Burgess, who turned out the two previous successful defenders, associated with a younger designer, Olin J. Stephens. 'Ranger' was the largest 'Class J' yacht yet built, 135ft. long over all and 166·5 tons' displacement. After a series of trial races she proved so superior to the other cup candidates, that she was chosen to defend.

In the match for the Cup, sailed between July 31 and Aug. 5, 'Ranger' won all four races by a wide margin, as the following summary shows:

Date		Course	Won by Min.	Sec.
July 31	'Ranger' .	30 miles	17	05
	'Endeavour II'	Windward and leeward		
Aug. 2	'Ranger' .	30 miles	18	32
	'Endeavour II'	Triangular		
Aug. 4	'Ranger' .	30 miles	4	27
	'Endeavour II'	Windward and leeward		
Aug. 5	'Ranger' .	30 miles		
	'Endeavour II'	Triangular	3	37

In designing 'Ranger' Messrs. Burgess and Stephens made exhaustive tests in a new testing tank at Stevens Institute, Hoboken, N.J., built under the direction of Prof. Kenneth Davidson. With the new devices it has been possible to ascertain the resistance due to leeway and to friction, and to calculate the probable speed by a model, as well as to determine, given certain characteristics of rig, the angle of heel at which the boat will sail in any given wind and the angle to the wind at which she will sail best. In spite of the defender's being a narrow boat (slightly over 20ft. beam) she had full lines, which the tank tests showed to be faster than other models of finer lines, and the results of the tests were amply borne out in the racing. A feature of 'Ranger's' rig was the efficient use of quadrilateral jibs

Keystone]

AMERICA'S CUP DEFENDER AND VICTOR, 'RANGER', WITH HAROLD S. VANDERBILT AT THE WHEEL and particularly of a large ' quad ' Genoa jib made of rayon, specially treated, and so cut as to stand the strains put upon a light sail of this great size. It seems likely that this cloth, called Cordura rayon, will have considerable effect on the making of racing sails in the future.

The International Six-Metre Class also had an active season in American waters, due to challenges from the Scandinavian countries for the Scandinavian Gold Cup and the Seawanhaka Cup, both held by the Seawanhaka-Corinthian Yacht Club, Oyster Bay, New York. Three new American ' Sixes ' were built, and two of these were chosen to represent the United States. The race for the Gold Cup was won by ' Lulu ', owned by Briggs Cunningham, which beat the Swedish ' Tidsfordriv II ', the Finnish ' Inga Lill XXVI ', and the Norwegian challenger ' Buri '. In the series for the Seawanhaka Cup, ' Rebel ', sailed by Cornelius Shields, beat the Norwegian ' Buri ' in three straight races.

Star Class.—In the big star class event, the International Championships, sailed on Long Island Sound in mid-September, 36 of these little 22½ft. sloops participated, including entries from Germany, Italy, Cuba, Venezuela, and Nassau. In a series noteworthy for strong breezes, the ' Lecky ', from San Diego, Cal., sailed by Milton Wegeforth, won with 164 points ; the German entry ' Pimm ', owned by Walter von Hutschler, being second with 159 points. ' Pimm ' won four of the five races, and only lost the championship by being damaged in the first race. ' Pimm ' used an ingenious arrangement for flexing her very light mast and bending her boom, which resulted in her being able to flatten her sail going to windward, and yet, by straightening the mast and bending the boom horizontally, give it plenty of draft when off the wind. The result has led to much experimenting in the class to get the same effect on the American boats.

A New Class.—Among the new classes of small racing yachts to make an appearance in 1937, the most important was the International One-design Class, sailed during the summer on Long Island Sound. These little boats were designed by Bjarne Aas and were built in Norway. They are 33ft. 2in. long over all ; 21ft. 5in. on the water, 6ft. 9in. beam ; 5ft. 4in. draft, and carry 416sq.ft. of sail. Twenty-five were originally ordered, and the class has since been adopted at Northeast Harbor, Maine, and at Bermuda.

Long-distance Racing.—In the long-distance and ocean-racing events, there were two outstanding races. These were the 475-mile run from New London to Gibson island, in which Walter Rothschild's ' Avanti ' won in a fleet of 35 starters, and H. P. Wells' ' Golden Eye ' took the honours in the small B Class ; and the annual Chicago-Mackinac Race of the Chicago Yacht Club. ' Avanti ', a Stephens-designed yawl, was one of the successful boats whose model was given a tank test before building. In the latter event, the fleet ran into a gale which scattered the yachts so badly that only a few finished. The winners were R. P. Benedict's ' Southern Cross ', Class A ; N. Rubinkam's ' Rubaiyát ', Class B, both designed by John Alden ; and the ' Revenge ', Walliser-Griffin, in the racing division. (H. L. St.)

YEMEN : *see* Arabia.

YORK, ARCHBISHOP OF, William Temple, (1881–), son of a former Archbishop of Canterbury, educated at Rugby and Balliol College, Oxford, was Bishop of Manchester from 1921 to 1928, when he succeeded the present Archbishop of Canterbury (*q.v.*). (*See Ency. Brit.*, vol. 21, p. 926, *s.v.* Temple, William.) In 1937, he officiated at the Coronation.

The Archbishop preached at a special service held in St. Mary's Cathedral, Glasgow, to celebrate the centenary of the reunion of the ancient dioceses of Glasgow and Galloway. The service took place in conjunction with the annual meeting of the Representative Council of the Episcopal Church of Scotland.

His Grace presided over the Edinburgh Conference on Faith and Order (Aug. 4–18), at which the agreements and disagreements between different Churches were considered, with a view to finding a solid basis for future work.

YOUNG MEN'S CHRISTIAN ASSOCIATION. The 21st World's Conference of the World's Alliance of Young Men's Christian Associations was held in Jan. 1937 in Mysore, and this was unique among such conferences, in that more than half the delegates came from Oriental countries. Its central theme was ' The Impelling Challenge of the Will of God for Youth '. In July, 15 nations took part in an international boys' camp in Finland, promoted by the World's Committee. Reports from all countries (Jan. 1, 1937) showed 10,308 associations, with 1,761,456 members, predominantly young men and boys. A body of secretaries or professional workers numbering 5,546 was reported, two-thirds of them employed in the United States.

The National Council of Young Men's Christian Associations of England, Ireland, and Wales recorded notable extensions during 1937 in the form of new buildings and other developments in almost every part of those countries. At the Festival of Youth held at Wembley in July, the Y.M.C.A. was represented by three London Associations and a squad of 96 boys.

The World's Committee publishes *Youth in the New World* ; *Flaming Milestones* ; and a quarterly journal, *World's Youth*. *See* also *Y.M.C.A. Year-book* for 1937 ; *The British Y.M.C.A. Review* (monthly).

YOUNG WOMEN'S CHRISTIAN ASSOCIATION. During 1937, the World's Young Women's Christian Association, with its headquarters in Geneva, carried on its usual programme of advisory service and co-ordination of the work of its constituent associations in 52 countries, which reach a total membership of more than a million women and girls.

The executive committees met twice in Geneva, with representatives of at least 15 nationalities. Following the regular plan adopted in 1934, two significant regional conferences were held : the North America Area Conference, April 28–30, in Toronto, including Canada, U.S.A., Mexico, Newfoundland, with Jamaica as a special guest ; and the Conference of northern Europe at Nyborg Strand, Denmark, July 24–31, with nine countries represented.

Three new areas (Iran, Siam, and Fiji) for development of the Young Women's Christian Association were given definite consideration, as a result of special requests from these areas for the advice and help of the World's Y.W.C.A.

Representatives from the World's Y.W.C.A. attended the following conferences : the Far Eastern Conference on Traffic in Women and Children in Java, Feb. 1937, under the League of Nations ; the Pan-Pacific Women's Conference in Vancouver, Canada, July 12–24 ; the Conference on ' Church, Community, and State ' at Oxford, England, July 12–26 ; and the World Conference on Faith and Order at Edinburgh, Aug. 3–18.

Furthur progress was made in the two special subjects of study carried on through the World's Y.W.C.A.—The Christian Emphasis, and The Place and Contribution of

Women. The joint work of the World's Y.M.C.A. and World's Y.W.C.A. was also a subject of study by a special commission.

The year 1937 realized a significant advance in bringing the Associations of the East and West into closer relationship through the direct collaboration of the general secretary of the Y.W.C.A. in Tokyo for six months on the staff of the World's Y.W.C.A. The year as a whole was significant for the World movement because of progress along many lines towards the goal of a more closely integrated world-wide Christian women's movement. (R. F. Wo.)

YOUTH MOVEMENTS in their modern form may be said to date from the foundation of the Scout organization by Baden-Powell at the beginning of the twentieth century. They have coincided with, and have been greatly aided by, the multiplication of cheap and easy means of transport, the co-operative holiday fellowship, and the organization of youth hostels, which play a very important part in developing the fraternity of youth. In England, the needs giving rise to youth movements have been so adequately met by the Scout and kindred organizations (Church Lads' Brigade, the Boys' Brigade, the Y.W.C.A., the G.F.S., etc.) that it has been unnecessary to do more than develop the Youth Hostels as a supplement to the club movements for youth generally. In Germany, the pre-war Wandervogel was largely a folk movement aiming at renewed contact with nature and a revival of folk song, lore, dance, arts, and crafts. Since the World War the governments of Russia, Germany, and Italy have been quick to see the possibilities of large-scale youth organizations, and it has been difficult for the earlier bodies (Scouts, etc.) to retain their independence. Youth organizations accordingly have been largely taken over by the State, directly or indirectly, as in the Russian Young Pioneers (10–16 years) and League of Youth (15 and over); the Hitler Jugend and Bund Deutscher Mädel; and the Italian Batilla and Avanguardisti. Less-developed but significant extensions of such youth movements may be observed in India, China, and Japan. To capture youth organizations is now an accepted objective of most States and political parties. In 1934, the American Youth Congress was founded in New York to co-ordinate the activities of youth organizations in America.

Analogies to youth movements in all countries are student organizations, such as the National Union of Students in England, the National Student Federation of America, the Christian Youth Council of North America, and the International Federation of Students, *Confédération Internationale des Étudiants*. These show some tendency to political activities in the direction of pacificism. The Oxford University Union protest against war had its counterpart in the America Student Union 'strike' of 1937. But student movements, though similar to, are not really identical with youth movements of a more general and non-professional character. (A. A. C.)

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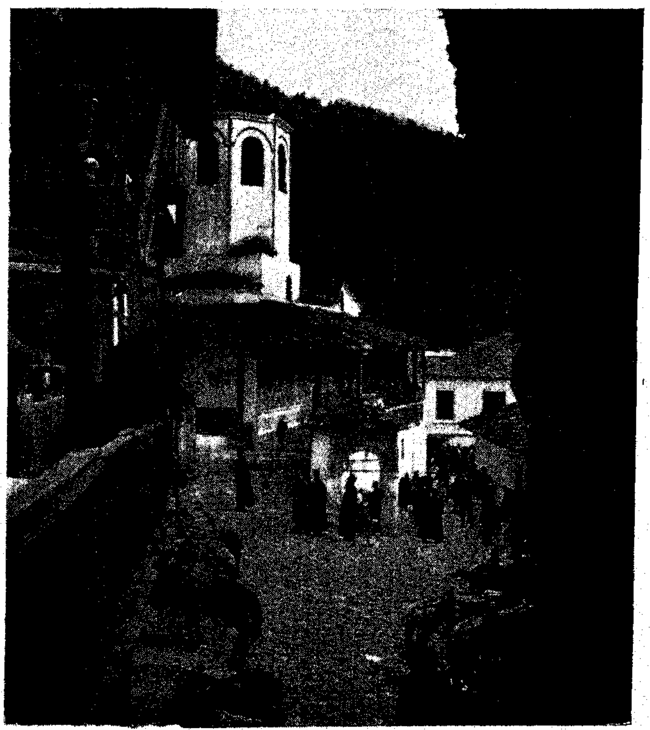
YUGOSLAVIA (*Kraljevina Jugoslavije*), a kingdom of S.E. Europe and member of the League of Nations. Bounded W. by the Adriatic, N.W. by Italy and Austria, N. by Hungary, N.E. by Rumania, E. by Bulgaria, S. by Greece, and S.E. by Albania. Ruler, King Peter II (born 1923), who succeeded on the murder of his father, the late King Alexander I, Oct. 9, 1934. Flag, blue, white, and red, flown horizontally. During his minority the King is represented by a Regency consisting of H.R.H. Prince Paul, M. R. Stanković, and M. I. Perović.

Area and Population.—The area is 95,558sq.m. Pop. (1936), 15,174,000. The population in 1921 was 12,017,323. The Serbs and Croats were then given officially as numbering 8,946,884, which probably included some 3,500,000 Croats and nearly half a million Bulgars and 'Macedonians': Slovenes, 1,024,761; Germans, 573,472; Magyars, 467,650; Albanians, 441,740. In 1931 the adherents of the Serbian Orthodox Church (Serbs, Bulgars, and Macedonians) numbered 6,785,501; Roman Catholics (Croats, Slovenes, Germans, Magyars, Bunyevaci) 5,217,910; Greek Catholics (Serb and Rumanian) 44,608; Protestants, 231,169; Moslems, 1,561,166; Jews, 63,405. Education is compulsory and State controlled.

The chief towns, with their populations, are: Belgrade (238,775), Zagreb (185,581), Subotica (100,058), Sarajevo (78,123), Skoplje (68,616), Novi Sad (63,985), and Ljubljana (59,765).

Constitution and History.—The late King Alexander abolished the old historic divisions of which Yugoslavia had been composed (Serbia, Croatia, Slovenia, Bosnia and Herzegovina, Dalmatia, Montenegro, with the Voivodina and Macedonia), and organized the country into Banovinas named after the chief rivers (Dravska, Savska, Vrbaska, Primorska, Drinska, Zetska, Dunavska, Moravska, Vardarska, with the capital city, Belgrade). He also abolished the former Constitution and political parties. In 1931 a new Constitution was introduced, vesting legislative power in the King, the Senate, and the Chamber of Deputies. At first only a single Government party was allowed to exist. An opposition is now permitted, but within very restricted limits, and regional or confessional parties are still prohibited. There is much opposition to this system, led by the Croats. In 1937, although the principles were maintained, the system was slightly relaxed, and the premier, Dr. Stoyadinović, held various conversations with M. Maček, the Croat leader. On Sept. 15 the leaders of the three chief Serbian 'shadow parties' (Radicals, Democrats, and Agrarians) met at Zagreb and reached an agreement with



Geographical Magazine]

PILGRIMS FLOCK EACH SEPTEMBER TO ST. JOHN BIJOSKI FOR THE FEAST DAY OF ST. JOHN THE BAPTIST

M. Maček's Croat Peasant Party to collaborate in working for free elections under a Cabinet of National Concentration for a Constituent Assembly to adopt a new Constitution. They urged the Regency to appoint a cabinet of ' the parties enjoying the confidence of the people.' A minor reconstruction of the cabinet followed ; but the internal question is clearly still far from solution.

Much agitation was caused by the Government's bill for a Concordat with the Holy See. The Holy Synod of the Orthodox Church protested violently against the alleged privileged position destined for the Roman Catholic Church, and excommunicated the members of the Government and Deputies voting for the bill. There was severe rioting. To make things worse, the head of the Serbian Orthodox Church, the Patriarch Varnava (*q.v.*), died at the height of the excitement, and was refused a State funeral. The House of Deputies passed the bill by 167 votes to 127 (July 19), but the Government subsequently withdrew the bill.

Yugoslavia greatly strengthened her international situation during 1937. The Treaty of Friendship with Bulgaria (*q.v.*), signed on Jan. 24, secured her eastern flank, and inaugurated an era of genuine good feeling. On March 26 a political and a commercial treaty were signed with Italy. The two countries undertook to respect their common frontiers on land and in the Adriatic. If either were attacked without provocation by one or more Powers, the other would abstain from action calculated to help the aggressor. Each would inform the other of measures taken to safeguard themselves in international crises. They agreed not to resort to war as an instrument of their national policies, and to settle their differences by peaceful means. They would not tolerate on their territories activities directed against each other's territorial integrity or political independence, or calculated to disturb their existing relations. It was understood that they exchanged assurances to respect the integrity of Albania, and not to seek exclusive advantages in that country. Under the trade agreement, Yugoslavia got increased exports to Italy, participation in the benefits of the Rome protocols, and an active trade balance with Italy.

While remaining faithful to the Little Entente and Balkan Entente, Yugoslavia also greatly improved her relations with Hungary. She was visited in turn by German and French statesmen. Opinion in the country seemed much divided on the advantages or otherwise of a close approach to the ' Rome-Berlin axis,' and no further commitments appear to have been undertaken.

Trade, Communications, Finance.—The basis of Yugoslavia's economy remains her agriculture. Maize, wheat, and fruit (especially plums) are largely cultivated. Industry grows slowly ; but mining, especially of coal, iron, copper ore, and lead, is becoming important. Imports during 1936 were valued at 4,077 million dinars, and exports at 4,376 million dinars. The figures, both for imports and exports, have risen steadily during the last five years. The balance of trade has been active since 1932. The chief imports come from Germany, followed by Czechoslovakia, Austria, Great Britain, and the U.S.A. Exports go to Germany, Austria, Czechoslovakia, Great Britain, and Italy. The currency is the dinar, nominally equal to 1·7612 gold cents. In 1936 this averaged 77·2 of its nominal value. The budget estimates for 1936–37 were balanced at 10,323·5 million dinars, and for 1937–38 at 10,949 million dinars.

Defence.—Military service is compulsory. The Army budgetary effectives in 1936–37 numbered 8,969 officers and 107,850 other ranks. The strength in mobilization was stated in 1937 to be well over 1,000,000 men. There is a small Navy and an effective Air Force.

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YUKON TERRITORY, the most westerly of the northern territories of Canada, was created a separate territory in June 1898, by Act of Parliament (the Yukon Act). It has a total area of 207,076sq.m., and a population of 4,000 (estimate, Dominion Bureau of Statistics, 1935). At the height of the gold-mining boom (1901) the population was 27,219. The seat of government is Dawson. By amending legislation, provision has been made for a local Government composed of a chief executive, the controller, and an elective legislative council of these members with a three-year tenure of office. The controller administers the Government of the territory under instructions from the governor-general-in-council.

Mining is the chief industry, closely followed by trapping, and some fishing. In 1936, the Yukon (together with the North-west territories) produced 50,344 fine ounces of gold, 1,053,733 of silver, and over 40,000 fur pelts. On Oct. 25, 1937, Mr. T. D. Pattullo, premier of British Columbia, announced his intention of obtaining the permission of the Dominion Government to extend the boundaries of the province to include the rich resources of the Yukon. The residents have objected, but the decision, when it is made, rests entirely with the Dominion Government. (J. T. C.)

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ZACHRISSON, ROBERT EUGEN, Swedish professor of English; born 1880; died at Ronneby, South Sweden, in July 1937. He became Professor of English at Upsala University in 1921, and is best known as the inventor, in 1930, of 'Anglic' or 'English in eezy speling,' an attempt to overcome the obstacle put by its illogical spelling in the way of English becoming a widely international language. He published many works on English literary and linguistic subjects, such as Shakespearian pronunciation, and modern English philosophy as reflected in literature.

ZANZIBAR. A British protectorate, comprising the islands of Zanzibar, Pemba, and adjacent small islands off the coast of Tanganyika Territory. It is ruled by the Sultan, H.H. Seyyid Sir Khalifa bin Harub (*b.* 1879; *succ.* 1911), aided by a British resident, Mr. J. Hathorn Hall, C.M.G., D.S.O. The capital is the city of Zanzibar. The Sultan was taken ill and removed to hospital after the opening of the legislature on Dec. 14, 1937.

Zanzibar has an area of 640sq.m. and a population of 137,741. Pemba, 25m. to the north, has area 380sq.m., and population 97,687. The religion is Mohammedan; and missionary education is consequently restricted. The Society of Friends has an industrial mission in Pemba.

Trade and Communications.—There is a weekly mail and a twice-weekly passenger air service. There are about 220 omnibuses on Zanzibar. The chief export is cloves (23,036,971lb. exported in 1936). The Government's attempt to limit Indian middlemen's profits in the clove industry led to an Indian boycott of Zanzibar cloves, and a drop in the receipts from the clove export duty to £30,000. It was stated, in July, 1937, that an agreement in this matter had been reached with the Indian Government. Copra was exported to the value of £144,347. Exports and imports for 1936 amounted to £1,037,000 and £871,000 respectively. East African Currency Board notes and coin became legal tender from Jan. 1, 1936, replacing the rupee. Taxation is by hut tax and estate and stamp duties. Revenue and expenditure for 1936 were £476,000 and £446,000 respectively.

ZINC: *see* MINERAL PRODUCTS.

ZIONISM, the movement first set on foot by Theodor Herzl, of Vienna, in 1897, at a World Jewish Congress at Basle for the re-establishment of a Jewish national State in Palestine. After abortive attempts had been made to negotiate with Turkey for a charter for Jewish colonization in Palestine, and the suggestion made by Britain for the establishment of a Jewish colony in east Africa had been refused, Zionism entered the field of practical politics with the 'Balfour Declaration' of 1917, in favour of the setting-up of a national home for the Jewish people in the Holy Land on the conclusion of the World War. In return for this the Zionist leaders rallied world Jewry in support of Arab independence.

The Zionist Organization, presided over by Dr. Chaim Weizmann, is an international body divided into national federations, of which at present about 45 exist in various parts of the world, and holds a biennial congress for the regulation of its affairs. At the twentieth congress, held in Zürich from Aug. 3 to 11, 1937, and attended by 500 delegates, the proposals for the partition of Palestine were the principal subject of discussion. The president, while rejecting the proposals for partition put forward by the Royal Commission (*see* PALESTINE), advised the congress not necessarily to refuse partition in some form as a possible solution of the problem, and the congress, by 300 votes to 158, resolved, while rejecting the scheme, to empower its executive to negotiate with the British Government with a view to clarifying the latter's terms for the establishment of a Jewish State in Palestine. Previous declarations of the desire of the Jewish people to reach a peaceful settlement with the Palestinian Arabs, based on mutual recognition of their respective rights, were reaffirmed by the congress. This decision was supported a few days later by the Jewish agency for Palestine, an official organization which includes both Zionist and non-Zionist Jews, represents general Jewish interests in the country in negotiations with the British Government, and, through its administrative committee, controls the character of Jewish immigration into Palestine, proportions of labour immigration certificates being assigned to the several Jewish parties at each Zionist congress as a guide to the agency.

At the annual conference of British Zionists held on May 23 strong criticism was expressed of the way in which the Palestinian mandate had been handled by Britain, which, said one speaker, had since 1922 merely interpreted the mandate instead of carrying it out. The increasing Arab opposition to Zionist ideals was strongly voiced at the Pan-Arab congress at Bloudan, Syria, in September, the president declaring that Zionism was a cancer in the body of the Arab countries which must be removed, or it would cause the death of the body, and that unless Britain ceased to support Zionism she must no longer count on Arab support in case of need.

The Zionists' main subjects of complaint against British mandatory administration in Palestine, as expressed at their conferences and in the statements of their leaders, are the failure to introduce a satisfactory system of land distribution; the toleration of subversive activities on the part of Islamic organizations; dilatoriness in dealing with Jewish proposals calling for executive action, and consequent obstruction in the establishment of the national home; delay and inefficiency in the settlement of legal suits and criminal charges; the restriction of the activities of Jewish municipalities; the display by British officials of pro-Arab tendencies; and general failure to ensure public security. *See* also ANTI-SEMITISM; PALESTINE.

ZOOLOGICAL GARDENS. Recent changes in the design of zoological gardens are notable, and the principle of viewing animals across moats instead of through bars has been extensively put into practice. During 1937 there were many additions and improvements to record.

Great Britain and Northern Ireland.—The Maharajah of Bharnagar gave £10,000 towards the construction of a 'King George VI Coronation Elephant House' at the Zoological Society's garden in London. Lord Snell opened the studio of animal art, where classes are arranged with animals as models. Mr. D. Seth-Smith gave the first television broadcast with the aid of small animals from

Sport & General]

BARBARA, THE POLAR BEAR, WHO DIED IN 1937, ENJOYS A GAME IN THE SNOW AT THE LONDON ZOO

the Zoo. Over half a million people visited Whipsnade Park during the season. Dudley Zoo, the most up-to-date in the country, was opened by Lord Dudley; it included animals from the Oxford Zoo, now closed. Lord Salvesen opened a tiger quarry at the Edinburgh Zoo in April. At Glasgow a society was formed to organize a zoological park. Chessington Zoo opened a new elephant house and a monkey hill. Chester made a new circular enclosure for Malayan bears, built on the open-air principle, and new lion accommodation was opened by Lord Leverhulme. At Liverpool a new zebra paddock was opened, and at the Manchester Zoo the old ape-house was turned into a cubs' club for young lions and tigers. At Bristol a male giraffe calf was born and the zoo acquired a young grey kangaroo and wallabies. At Belfast a new ape-house was constructed from the old sick-bay.

United States.—Recent exhibits at the Zoological Park, New York, included a Masai giraffe, a pair of secretary birds, an Asiga gazelle antelope from Russia, and a wattled crane from East Africa. Dr. Ditmars, curator of mammals and reptiles, went to Panama to visit the Madden dam area to investigate the returning growth of the jungle over land which was cleared, and to speak on vampire bats to the Panama Natural History Society. Dr. William Beebe returned from his twenty-fifth expedition to study the marine life of Bermuda and set out for his twenty-sixth expedition. Dr. C. R. Schroeder, veterinarian and pathologist at San Diego, California, was appointed veterinarian of the New York Zoological Park, succeeding Dr. Noback, who died in January. The Society accepted the management of the 'Permanent Wild Life Fund' of $130,000 left it by Dr. Hornaday, a former director of the Park who died in April. The National Zoological Park, Washington, opened a new wing to the Bird House. The cages have glass fronts and sky-lights to allow the birds direct sunshine. A panorama cage is refrigerated for Arctic birds. The director spent five months in the East Indies collecting strange animals. At the Chicago Zoo the air in the lion house is changed every four minutes and oxygen is supplied to the delicate young chimpanzees. Beaver in the Philadelphia Zoo have a lake to allow them to build.

Europe.—The Copenhagen Zoo is replacing its out-of-date housing by modern buildings. Frankfurt received a giant armadillo from South America. Munich opened a new and particularly good ape-house, and parrots were placed on stands in front of the elephant pens. At Nuremberg the zoo ground is required for a parade ground and the zoo will be moved out into the country. An interesting experiment is being carried out of breeding back to the extinct wild ox of Europe. The polar bears at Leipzig have diving boards of green plate glass, which give an illusion of ice, with water slipping under. Professor Manteifel, director of the State Zoo, Moscow, found that hundreds of small Australian parrots refused to nest until dummy nests were provided.

British Empire.—At Pretoria, South Africa, a new hillside enclosure for lions and tigers was opened, with observation towers. The hornbills bred, with the female shut up in a tree-trunk. At the Melbourne Zoo observations of breeding koalas continued on a cross between a Queensland father and Victorian mother. (V. R.)

ZOOLOGY. A review of the genetics of the Lepidoptera has been given by Ford, in the course of which he develops a theory in explanation of the phenomenon known as 'industrial melanism'; that is, the supersession in industrial areas of black varieties of Lepidoptera for those of other colours. It has previously been imagined that the melanism was due either to selection favouring black mutants, or to the induction of black mutations by the manganese and lead salts which, in such areas, cover the leaves of the food-plants. It is, however, now considered unlikely that melanism can be induced in this way, and Ford suggests that the origin of melanic varieties is due to the selection of genes conferring physiological advantages combined with a black colour. This accounts for the fact that melanic forms show, in general, a higher viability, and suggests that melanic varieties will become established wherever their survival is not directly handicapped by their

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WHIPSNADE. THE TIGERS APPEAR TO MAKE THE MOST OF UNUSUAL CONDITIONS IN THEIR PIT black colour, and particularly, therefore, in industrial areas. The interest of the phenomenon is thereby shifted from the problem of the origin of melanic varieties to the question why these hardier forms do not supplant their non-melanic relatives throughout the range of the species. As indicated above, the answer appears to be that outside manufacturing areas the melanic forms in spite of their physiological advantages are handicapped by their blackness and kept down by counter-selection for colour.

Great advances in knowledge of the phenomena of reproduction in Calcareous Sponges have been made by Duboscq and Tuzet. With regard to the origin of the eggs, it seems more than probable that the oogonia are derived from choanocytes which lose their flagella and collars and desert the flagellated chambers for the underlying mesenchyme. The growth of the oocyte is accomplished with the help of nutritive cells, the 'dolly-cell', and the 'satellite', which are likewise immigrated choanocytes. The sperm which has made its way into a flagellated chamber enters a choanocyte, which then withdraws and carries the sperm to the egg, which is then fertilized.

Cleavage leads to the formation of a 'stomoblastula': a single-layered blastula with a hole through which yet more immigrated choanocytes constantly pass to feed the embryo. The stomoblastula has four radially situated sense-organs, and its cells develop flagella on their internal surface, projecting into the central cavity. A remarkable event then occurs, which has been overlooked by all previous workers. The stomoblastula literally turns itself inside out, and reverses its surfaces. The flagella are then on the external surface of the embryo, which soon becomes converted into the familiar amphiblastula larva, and swims away. Thus, in addition to the well-known reversal of the layers which takes place during metamorphosis, these sponges undergo a first reversal during the embryonic stage.

A reinvestigation of the process of gastrulation in Vertebrates with heavily yolked eggs has led Pasteels to conclusions of considerable importance. Gastrulation is the combined result of a number of specific mass-movements of different parts of the blastula: invagination, convergence, and expansion. The time-relations of these movements differ. In the Anamnia, invagination and convergence start in the dorsal region and progressively affect the lateral and ventral regions; expansion occurs at the same time. In Reptiles, invagination and convergence take place simultaneously all round the blastopore, but expansion occurs relatively later. In Birds, invagination and convergence start in the ventral region and progressively affect the lateral and dorsal regions, and expansion does not begin until invagination has finished. In addition, in Birds, there are combined movements of the upper and lower layers of the blastoderm. By assuming variations in these constituent processes of gastrulation, Pasteels is able to interpret the primitive streak and the retreat of Hensen's node. It is also worth noticing that gastrulation cannot be defined statically in terms of the shapes of gastrulae of different organisms, for there is too much disagreement between them; gastrulation can only be defined kinetically in terms of the above-mentioned mass-movements, the result of whose activities is the shifting into position of the materials of the future internal organs.

The outstanding advances in the study of embryology, resulting from Spemann's discovery of the power of a certain region (the 'organizer') of amphibian embryos to induce the formation of various essential structures, have been extended to Birds and Mammals by Waddington. He has succeeded in pressing the analysis of the phenomenon farther by distinguishing between 'evocation', the process of induction of a structure, say the spinal cord, and 'individuation', which is the determination of the regional characters of the structure induced in such a way that they conform to the normal structure of an embryo, for example, the modification of the front end of the spinal cord into a brain. 'Individuation' has, so far, been obtained only as the result of the activities of living tissues; 'evocation' has, however, been shown to be due to the activity of chemical substances, probably of a sterol nature combined with glycogen and protein. Hartley, Waddington, and Needham have obtained what appear to be examples of evocation without individuation, by subjecting isolated pieces of epidermis to the action of glycogen and its associated substances.

The lateral line organs of aquatic Vertebrates have long been objects of interest from many points of view. In development, structure, and innervation, they are closely related to the auditory vesicles. As regards their function, Sand has now been able to show that the lateral line sense organs have the property of spontaneous discharge of impulses, and that these impulses are inhibited or augmented according as fluid flows in one direction or the other through the lateral line canal. It is interesting to recall that, as Loewenstein and Sand have shown, the sense organs of the horizontal semicircular canal of the ear are also spontaneous dischargers of impulses, which are reduced or increased by rotation of the head in the contralateral or ipsilateral directions respectively.

A description of the structure of the Acanthodian fishes is now available, thanks to the work of Watson. These remarkable fishes present a number of features of first-class importance for the interpretation of the evolutionary history of the early Vertebrates. The body was covered with bony scales, and both dermal and perichondral bones were present. The bone was of peculiar kind, rarely if ever containing bone-cells. It is interesting to note that in the earliest Acanthodians, while the visceral arches had thin layers of perichondral bone, the brain-case was only cartilaginous. The lateral line canals ran between two rows of scales. The nostrils pointed forwards. In addition to the pectoral and pelvic paired fins, there were numerous pairs of intermediate paired fins, which condition provides strong evidence in favour of the evolution of paired fins from longitudinal fin-folds. The gill-slits were protected by a mandibular operculum; the hyoidean slit was large, and the hyoid arch played no part in the suspension of the jaws. This feature is used by Watson to characterize the group termed by him the Aphetohyoidea, containing the Acanthodii, Arthrodira, Antiarchi, and others, and which represents the most primitive grade of Gnathostome Vertebrate structure.

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(G. R. DE B.)

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